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Personnel at Northwestern—*L. B. Hopkins*

Height, Weight and Salesmanship—*Harry D. Kitson*

Vocational Tests—*Donald G. Paterson*

Psychology and Business—*Clarence S. Yoakum*

Measurements of Interests—*Max Freyd*

News Notes Book Reviews Abstracts

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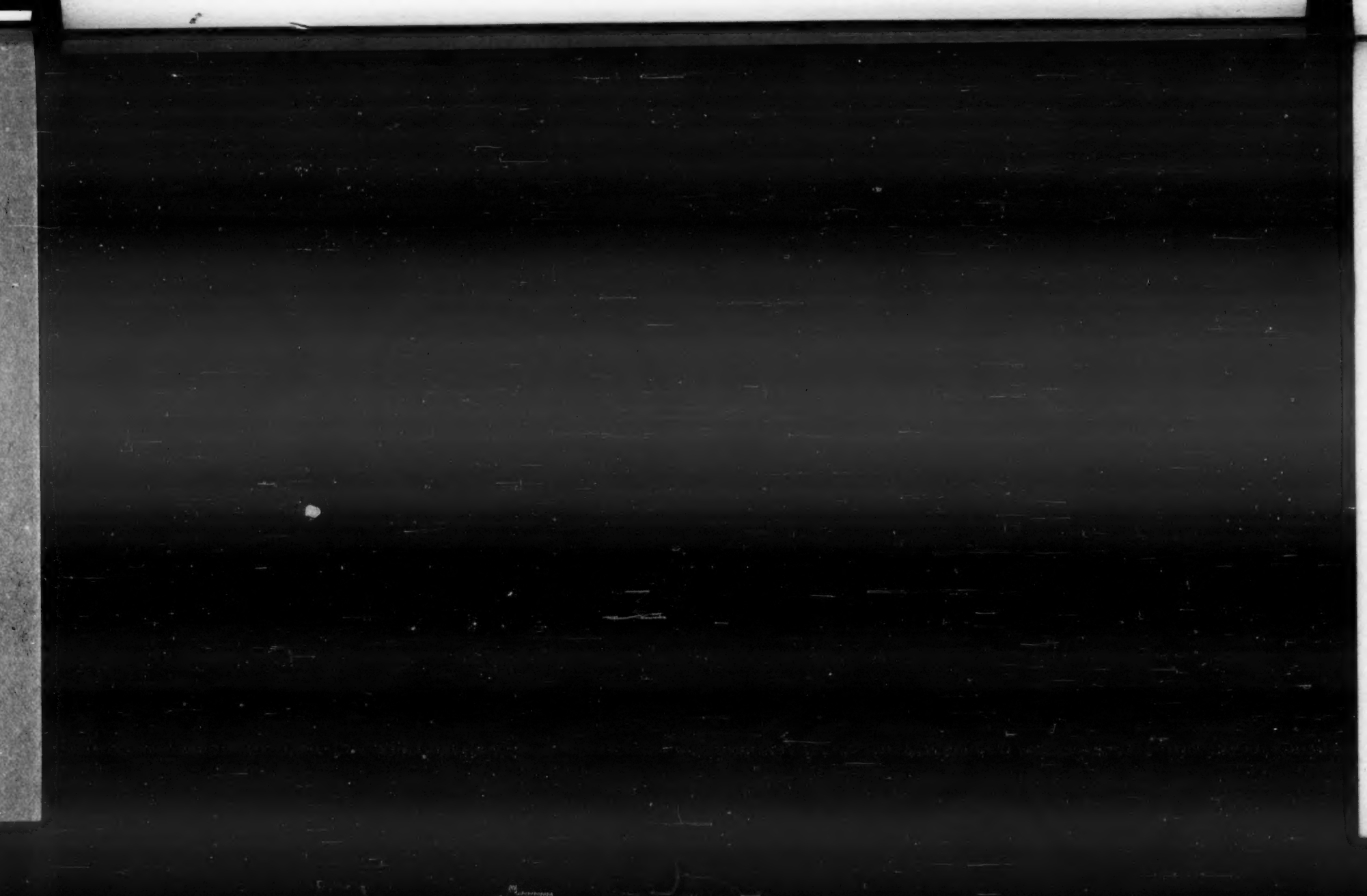

Personnel Work at Northwestern University

By L. B. Hopkins, *Director of Personnel, Northwestern University; Treasurer, The Scott Company*

American Universities are more and more asserting and assuming responsibility for the general development of their students as well as for their purely formal education. There has been a time when American universities threw the freshman into the educational pool or let him fall in, to sink or to swin to the other side as best as he could. They are now increasingly concerned not only with the student's success in a series of more or less discrete courses but seek also to further his general development and to advise and aid him in his orientation to professional or industrial life. The student as a developing individual becomes the subject of special interest.

With this development it has become the practice to establish in the universities an officer charged with the duty of assisting the student to adjust himself properly to his work and to his future vocational interest. This officer is equipped with special experience and information. He keeps records of the previous history, the abilities, desires, and professional and occupational interests of the student. This officer becomes the head of the university's activities in the personnel field. One of the earliest examples of this development in the colleges was that at Dartmouth. Here Professor Richard W. Husband is the university personnel officer and holds the title of Associate Dean. He is assisted in his work by Professor G. E. Basset. Northwestern University is one of the most recent institutions to adapt and develop an extended personnel program. In October of 1922, L. B. Hopkins was appointed Director of Personnel.

Mr. Hopkins in the present vigorous and interesting article describes the organization, activities and the purposes of the work at Northwestern. Mr. Hopkins brings to his task a wide and distinguished experience in the industrial personnel field. During the war he was called from his work at the General Electric Company in

Pittsfield, Massachusetts, to work with Beardsley Ruml in the development and direction of the trade test section of the Committee on the Classification of Personnel. He subsequently became treasurer of the Scott Company—engineers and consultants in industrial personnel—and has been constantly engaged in undertaking surveys and in developing personnel systems for large industrial concerns.

Mr. Hopkins' present paper shows what opportunity there is for mutually helpful relations between the trades, professions and industries on the one hand and the universities on the other hand. It also shows how personnel practices originally developed in the industrial field are being adapted for use in the educational field.

ANY statement of what is to be done in Personnel Work at Northwestern University is so much a matter of prophecy at this time that it is surely permissable to avail oneself of the privilege accorded the prophets who forecast the movements of trains, and, like them, to announce that this forecast is "subject to change without notice." Likewise, we should like to avail ourselves of that protection so often used in the field of research which is in substance that we recognize our present data to be so incomplete that the probability is our present conclusions are worthless. Moreover, we shall still further disclaim full responsibility for what may happen by acknowledging that practically everything we expect to attempt is undoubtedly being attempted somewhere else, and that we have borrowed with the utmost freedom especially from the methods used by Professor Husband at Dartmouth College and by the Scott Company in its work in industry. Lastly we should point out that our program is intended, as far as it is made out, to fit one and only one situation, and that is the situation as it exists today at Northwestern University.

Employing the ordinary term of Personnel, the work consists of Selection, Development, and Placement of students. It involves the recognition of the need for a tremendous amount of study of Opportunities, Capacities, and Desires. It demands an appreciation of the fact that individual students differ, as well as other individuals, and that individual differences play a part in the scheme of education. It recognizes especially the limitations of our present knowledge in this field and the need, first for a careful and constant checking of our present methods, and second for the search for more reliable information on the basis of which improved methods may be created.

The work of the Personnel Office is predicated upon the assumption that the aim of the institution is to direct the student in his preparation for life. It presupposes, that, of the students who apply for admission, some will profit more than others by the particular type of influence and education that this institution is in a position to offer.

This involves Selection. It assumes that, of those admitted, the majority are of an age and from an environment, where the home influence has relieved them of much of the responsibility that they must assume when they graduate, and that the institution may properly assist them in the manner and spirit in which they accept their increased responsibilities. This we call Development. It recognizes no matter how capable the student or how successful the University that the new graduate will not be qualified to enter his chosen vocation, whether profession or business, on any other basis than a beginner. However, the opportunities for beginners differ in different professional schools and in different business establishments. The student may profit then if helped, not only as regards the type of vocation that he choses, but also as regards the type of professional school or business house that he selects in which to begin. Such help we include under placement.

It is not the function of this office to state what method of selection shall be adopted at Northwestern University. However, we believe it to be our function to assist in the study of the problem of selection, and to insist as often as is necessary that "selection" is a problem still awaiting solution. Moreover, we believe it to be our function to gather facts as to the success or failure of the existing plan of selection in terms of the misfits admitted, in terms of exits, and in terms of students evidently well fitted and well adapted to profit most by the type of educational influence that this institution is in a position to offer.

One of the truly great benefits that we believe is to be derived from such a study is the obligation it imposes of making a searching analysis of just what the institution is in a position to offer. When that point is settled it becomes quite as much a crime against the individual and against society, to admit applicants into the institution as students, and to do the selecting after they are in, as it is for industry to hire workers from neighboring cities and states in order to select a dozen of the best and discharge the rest. In some respects it is even a greater injustice to the individual for the educational institution enjoys the prestige of moral integrity that always places the stigma of failure upon the student who is dropped, when it may be solely the result of the institution's failure to meet its very definite obligation of selection.

A great deal has been done in the development of tests for selection. Much more must and will be done. It is important to recognize that alertness of mind should not be the sole basis of selection for the educational institution any more than for the industrial establishment. At Northwestern, then, it is intended that Personnel Work shall assist in the development of a more scientific basis for selection through a more searching analysis of what each school has to offer its student body; and through study and research as to what relationships exist between the various types of students' capacities and interests and satisfactory accomplishment.

The academic world has long insisted that Personnel Work should

involve a great deal more than the initial hiring of employees. Today industry generally accepts this point of view. In some instances a great deal of progress has been made in the determination of occupational opportunities, and in the improving of methods of follow-up, training, transfer, and promotion of employees on an individual basis.

We have referred to this phase of our work at Northwestern as "Development." As one of the first steps under "Development" we shall try to bring to the student some knowledge of the various possibilities ahead of him, and some information regarding what is involved in these various possibilities. We shall attempt, therefore, to learn from the professional schools just what their appeal is to the student. We are asking them now these specific questions (using the Medical School as an illustration).

What is there in the medicial profession that should appeal to the student who has not yet decided upon his vocation or profession?

What, in your opinion, may the average doctor expect as financial compensation at the end of one year? At the end of five years? At the end of ten years? At the end of twenty-five years?

What are the compensations other than financial?

What is the range of possibilities of work for the man who has completed his professional training?

These same questions will be asked of men at the head of the various professions. We shall also attempt to learn more concerning the appeals and the opportunities in the various types of industries. We have already sent out inquiries, approximately one-hundred, to presidents and managers asking for such information as this:

What is there in your particular industry that should appeal to the college man?

What appeal is there in your field that differs from that of other industries?

What range of salary may the college man hope for in the first year? At the end of five years? At the end of ten years? At the end of twenty-five years?

What are the compensations other than financial?

What subject or combination of subjects do you believe to be most beneficial in preparing for this work?

Where can a graduate of a College of Liberal Arts best start in the industry in justice to himself and the industry?

Where can a graduate of a collegiate course of a School of Commerce best start?

What are the successive steps in promotion and to what types of occupations do these successive steps lead?

The replies received thus far are exceedingly valuable and most gratifying. This information will all be made available to the students.

We shall also endeavor to accumulate more specific descriptions of occupations, attempting at first to select the more typical kinds of occupations in a wide variety of business organizations. These descriptions will not deal so much with the tools and devices used, as with the functions of the positions. Undue detail will be avoided but the minimum qualifications required and the additional qualifications desired will be set forth in terms of (1) physical requirements, (2) education, (3) special training, (4) experience, (5) technical skill, (6) personal qualities such as judgment, creative ability, supervisory ability, etc. The duties and responsibilities will be stated, together with

the usual hours of work and rate of pay. Also, wherever possible, there will be indicated whatever is known of the natural opportunities for advancement. A start has been made already on a small scale, to be sure, in the gathering of this information.

It is obvious that courses of lectures and perhaps courses of study, will be a natural sequence of this preliminary effort to bring to the student information as to the opportunities in order that he may decide upon his own vocation with some definite appreciation of what it involves.

Over against this picture of the job, we shall endeavor to show the student a picture of himself. We shall go into some detail in accumulating facts concerning his history up to the time he enters college. We shall summarize his scholastic marks in his various courses in college. We shall record his test results. We shall request the faculty members, who know him, to rate him in other than scholastic qualities. The student will also be requested to give us as references the names of three classmates from whom we shall secure ratings in these same qualities. We shall request him to give us a distribution of how he is spending his time. We shall record his activities outside of the classrooms together with honors received and other miscellaneous facts that will help us to know his possibilities, his interests, and his all round development as a man. With this information at hand, we shall discuss with him his record and any possible relationships between his record and his vocational preferences.

The question that has been asked so far more frequently than any other, especially in our contacts with parents, has been, "What are you going to do with the boy who does not know what his vocational preference is?" Already as a result of interviews with the freshmen here at Northwestern University, we are discovering that we have three groups: first, those who express a very definite intention of preparing themselves for a specific vocation; second, those who state their vocational preference and then give a second or third choice intimating that they have not definitely made up their minds just which one of the possibilities they may undertake; third those who state definitely that they have reached no decision yet as regards their future.

A declaration that we are going to do anything with the students who have not made up their minds regarding their vocational preference would be absurd. The decision in every case must be the individual's own decision. We shall, however, attempt, as has already been explained, to provide more information than has been available heretofore regarding the possibilities both in the professions and in business. We shall discuss with such students as are interested these possibilities and their individual qualifications. This will include many of those who have made no decision as to their future, as well as many of those in the other two groups. In those cases where the students fail to reveal an interest in what they are going to do after graduation, we shall endeavor to awaken their interest and

then maintain our contacts with them on exactly the same basis that we maintain our contacts with others.

In order to reveal something of the information that we shall have available regarding the students prior to the interviews, we are including in this article a reproduction of the Summary Record. It will be noted that the first page provides for the student's history up to his entrance in the University, and that the second and third pages provide for his records as a student here. The last page provides for a very meager record of his history after graduation.

The nature of this information is obvious with the exception of the space provided for the ratings. We are reproducing in this article a copy of the rating scale used in this connection. In the space provided in the Summary Record for ratings, it will be noted that against Quality 1 the upper space (marked F) provides for faculty ratings. Here will be entered the average of the ratings of at least three faculty members. In the lower space (marked S) opposite Quality 1 there will be recorded the average ratings of three classmates whom the student has selected as raters. Thus the student will know his average faculty rating and average student rating, but will not know at any time how he was rated by any individual.

This plan for student ratings is very frankly an experiment. There is one point of interest that has already developed. Whatever the value of the ratings themselves, the plan is helping materially in the interviews, for under this plan each student is quick to perceive that he may be both in the position of being rated and of rating others. It may well develop, therefore, that this plan of securing students' ratings of each other will prove to be one of the important factors in the awakening of interest and in the development of a sense of responsibility among those students who might otherwise continue to drift for a considerable part of their college course without giving serious consideration either to their own qualifications or to the opportunities for work that they will some day undertake.

As regards placement, we shall not assume the function of securing positions for students upon graduation although we may at times assist them in this manner. We shall endeavor to help students in this search for openings and we shall endeavor to help them guage the favorable and unfavorable characteristics of one company as compared with another. We refer in this instance, particularly, to those characteristics of management in a company which determine the attitude of the organization toward college men, and the provisions made for opening up reasonable opportunities for successive steps in training and promotion.

It is a common complaint of Management that the college man comes from his senior year into the business organization "fat-headed, conceited, and lazy" and that he considers because of his college education "the world owes him a living." Unfortunately, the tendency of former days on the part of colleges and universities to admit any high school graduate who applied for ad-

mission and then to nurse him along from one flunked course to another has produced some such men. Management's complaint, however, arises much more frequently from an irritation caused by their own unfairness to the college man whom they have employed with promises that they are not prepared to fulfill. And then they frequently become annoyed because the college man expects them to keep their promises.

Ask one-hundred managers where a college man can best start in their business and what are the successive steps in training and promotion, and ninety of them will reply that the college man must start at the bottom, and as for advancement, that depends on the man himself. Frequently, they add that there is always room at the top.

Such statements are bunk. Let the college man start at the bottom by all means, but Management must recognize that if they start him there and *leave him there*, he is going to kick or get out, if he is any good. But in any case, his advancement does not depend on the man himself any more than on the plan devised by the Management for his being moved along from one step to the next when he has mastered each assignment. And when a company employs ten college men and has work for only one at the end of the training period, Management must not become impatient and irritated because the other nine refuse to sit around waiting for some one to die in order that they too may advance. In many companies that is the only chance there is of there being room at the top.

There are some companies and some managers who have recognized their obligation as well as the college man's obligation, and who have attempted to insure the capable, energetic, intelligent fellow a chance to advance, at least through his training period, as and when he has demonstrated his ability to do so. We intend, therefore, to learn more about such characteristics as these concerning the companies seeking to interest men of this institution in the opportunities for employment which they have open for college men.

This is our chief placement function for the present. We are going to attempt to persuade industry to show cause why they should have the pick of our student graduates, at the same time that we are attempting to assist the student graduate to approach the new job well equipped to enter upon, and to progress in, the work of his choice.

PERSONNEL FORMS IN USE AT NORTHWESTERN UNIVERSITY

FIG. 1. SUMMARY RECORD SHEET

Owing to technical difficulties it is impossible to reproduce the form of Summary Record used at Northwestern University in personnel work. The form is on a folded sheet giving eight letter size pages. It is lightly struck in a diluted ink, to the end that the information entered on the record may the more easily catch the reader's eye, the printing on the sheet serving merely to indicate what information is wanted and where it should be recorded. The following summary indicates the gen-

eral content of the Record. Each of the main headings represents a ruled section on the sheet, the sub-headings representing the detailed content of each section.

NORTHWESTERN UNIVERSITY

Summary Record

of

Students of the School of————

Page 1

I. Identifying information
  A. Name
  B. Telephone number
  C. School address
  D. Organization
  E. Home address
  F. Place and date of birth
II. Photograph (space at extreme right of page—1½ by 2)
III. Family
  A. Father
    1. Occupation
    2. Education
    3. Place of birth
  B. Mother—place of birth
  C. Older brothers and sisters
    1. Number
    2. Ages
    3. Educations
    4. Occupations
IV. Previous education and connections
  A. Preparatory school
    1. Name of school
    2. Standing in class
    3. Honors received
  B. Colleges previously attended, if any
  C. Special training
  D. Church
  E. Club memberships outside university
V. Additional facts relating to admission. (2 lines)
VI. Previous experience (4 lines)
VII. Health—Physical condition at entrance
  A. General health
  B. Height
  C. Weight
  D. Physical defects

Page 2

I. Studies, grades, credits and standing for each semester of the four years. (Arranged in tabular form—half page in size.)
II. Ratings by faculty and fellow students on Qualities I, II, III, IV, and V. (See reproduction of small card on page 285 of Journal for details regarding Qualities.) Record, group standing and semester averages are given for each semester of the four years.
III. Psychological Tests—record of standing and group for each semester.

Page 3

1. Distribution of time—hours spent per week at:
  A. Athletics
  B. Social
  C. Other campus activities
  D. Outside work
  E. Leisure
  F. Class room and laboratory
  G. Study

  (Given by semesters for each of the four years—for detailed weekly report see form on page 288 of the Journal.)
II. To what extent self-supporting. (4 lines.)
III. Vocational preference—three preferences and date on which preference was recorded. (To be filled in for each year.)
IV. Miscellaneous
  A. Prizes and honors won in college
  B. College nickname

Page 4

1. First position after leaving college (2 lines.)
II. Subsequent history. (Remainder of page.)

Record of Tests and Ratings

Name _____

QUALITIES

I Consider his success in winning respects, confidence, and good-will through his personality.

II Consider the extent to which he is capable of sustained effort; his perseverence.

III Consider his ability to grasp readily a situation or idea; his alertness of mind.

IV Consider the confidence and vigor with which he approaches a situation and pushes through to accomplishment.

V Consider the extent to which he may be relied upon to perform regularly his work with promptness and accuracy.

The group standing is on the basis of five groups.

FIG. 2. CARD USED IN RECORDING TESTS AND RATINGS

Class _____

	1st Year		2nd Year		3rd Year		4th Year	
	Rec'd	Group	Rec'd	Group	Rec'd	Group	Rec'd	Group
Sem. Avgs.								
QI F								
QI S								
QII F								
QII S								
QIII F								
QIII S								
QIV F								
QIV S								
QV F								
QV S								
Psy'l Score.								

FIG. 3. TABLE FOR RECORDING FACULTY AND STUDENT RATINGS OF INDIVIDUAL STUDENT WITH REGARD TO QUALITIES I, II, III, IV, AND V. (OBVERSE OF FIGURE 2)

Student References

Name _____ **Class** _____

Write below the names of three classmates whom you would give as references.

1 Name _____

Address _____ Tel. No. _____

2 Name _____

Address _____ Tel. No. _____

3 Name _____

Address _____ Tel. No. _____

FIG. 4. CARD USED BY STUDENT TO RECORD NAMES OF THREE CLASSMATES WHOM HE WOULD BE WILLING TO HAVE USED AS REFERENCES. (ORIGINAL SIZE)

NORTHWESTERN UNIVERSITY

Student Rating Scale

School ..... Date .....

Name of Person Doing Rating ..... Name of Student Being Rated .....

INSTRUCTIONS FOR MAKING OUT THIS REPORT:—Indicate your rating in each quality by placing a check (√) on the line where you think it ought to be. For instance, if in quality I, you think the person you are rating ranks somewhere between INDIFFERENT and FAVORABLE, put your check on the line somewhere between these two points. Base your rating of this student on your all-around knowledge of him at this time.

QUALITIES	REPORT				
I. Consider his success in winning respect, confidence, and good-will through his personality.	Inspiring	Favorable	Indifferent	Unfavorable	Repellent
II. Consider the extent to which he is capable of sustained effort; his perseverance.	Exceptionally Persevering	Generally Persevering	Easily Discouraged at Times		No Tendency to Persevere
III. Consider his ability to grasp readily a situation or idea; his alertness of mind.	Unusually Keen	Quick	Mentally Slow		Dull
IV. Consider the confidence and vigor with which he approaches a situation and pushes through to accomplishment.	Exceedingly Vigorous	Forceful	Often Lacks Confidence		Apathetic
V. Consider the extent to which he may be relied upon to perform regularly his work with promptness and accuracy.	Thoroughly Reliable At All Times	Ordinarily Reliable	Reliability Questionable at Times		Not to be Relied Upon

REMARKS: _____

NW 6-27-23—Scale A—

FIG. 5. FORM USED BY STUDENTS AND FACULTY WHEN RATING STUDENTS (ORIGINAL SIZE—11 BY 8½)

Name _____ Class _____

Analysis of Rating

Date _____

Qualities	Faculty						Students			
I										
II										
III										
IV										
V										

Remarks _____

Date _____

Qualities	Faculty						Students			
I										
II										
III										
IV										
V										

Remarks _____

FIG. 6. TABLE FOR ANALYSIS OF RATING BY FACULTY AND STUDENTS
(ORIGINAL SIZE—11 BY 8½)

DIRECTIONS—On the other side of this sheet record the things which you do and the hours of the day at which they are done. Using Monday as an example the following entries might be made· Sleep 12-7:10, Breakfast 7:10-8, Classes 8-10, Leisure 10-10:30, Study 10:30-12, and so on for every hour of each day of the week.

On this side in the form below summarize the hours spent each day on the items indicated in the left column. When this has been done for each day enter the amount of time spent on each item during the week in the column on the right.

	MON.	TUES.	WED.	THURS.	FRI.	SAT	SUN.	TOTAL FOR WEEK
ATHELTICS								
OTHER CAMPUS ACTIVITIES								
SOCIAL								
OUTSIDE WORK								
SLEEP								
MEALS								
LEISURE AND MISCELLANEOUS								
CLASS AND LABORATORY								
STUDY								
TOTAL FOR DAYS	24	24	24	24	24	24	24	168

FIG. 7. RECORD SHEET SHOWING DISTRIBUTION OF STUDENT'S TIME. (ORIGINAL SIZE—11 BY 8½)

TIME DISTRIBUTION SHEET

MONDAY	HOURS	TUESDAY	HOURS	WEDNESDAY	HOURS	THURSDAY	HOURS	FRIDAY	HOURS	SATURDAY	HOURS	SUNDAY	HOURS

FIG. 8. TIME DISTRIBUTION SHEET, LISTING ACTIVITIES CHRONOLOGICALLY DURING THE DAY. (OBVERSE OF FIGURE 7)

Height and Weight as Factors in Salesmanship

By Harry D. Kitson, Ph.D., *Professor of Psychology, Indiana University*

Popular assumptions regarding personal physical characteristics and occupational success—so called systems of character analysis—seem to be receiving the attention of scientific investigation. In the Journal of Personnel Research for July, Professor Donald G. Paterson and Miss Katherine E. Ludgate analyzed the Blackford law of color: "in brief always and everywhere, the normal blond has positive, dynamic, driving, aggressive, domineering, impatient, active, quick, hopeful, speculative, changeable and variety-loving characteristics; while the normal brunette has negative, static, conservative, imitative, submissive, cautious, painstaking, patient, plodding, slow, deliberate, serious, thoughtful, specializing characteristics"—and showed that blond and brunette persons have the so called blond and brunette traits in about equal proportions.

In the present article Professor Kitson takes up the matter of Height and Weight to find out whether or not they have a definite relation to success in salesmanship. He studies the distribution of salesmen in regard to these two factors and their probable influence in salesmanship as measured by the earning power of the individual. His conclusion, on the basis of measurements of 600 salesmen selling staple and specialty products, is that good salesmen are not more frequently large than poor salesmen.

CONSIDERABLE controversy centers around the question, What are the physical characteristics needful for success in the occupation of salesman? A host of answers are given: square jaw, wide forehead, blond hair and complexion, tallness, fatness, and the like. Theories regarding these traits can be of little practical value, however, until they are subjected to scientific test. Salesmen of different degrees of successfulness must be measured with respect to the alleged physical signs of potential selling ability, and only such traits as are most frequently present in good salesmen and most frequently absent in poor salesmen can be regarded as criteria of high selling ability.

Figures regarding some of the controversial portions of the anatomy can hardly be secured. Most salesmen would resent the application of a tapeline to their forehead or of a T-square to their jaw. There are two of the moot characteristics, however, that are fairly accessible to measurement—height and weight. These are sometimes claimed to be very great assets in selling, on the theory that by mere animal bulk a salesman can "impress" and "dominate" his client. Here is a case readily open to investigation. It is entirely feasible to rank a group of salesmen according to their productiveness, and to determine what degree of correspondence exists between their selling ability and stature. If it should be found that those who rank high in selling ability are taller and heavier than their less successful colleagues then it would seem that height and weight are assets in selling. If the reverse occurs the opposite would be indicated.

TABLE 1

Showing number of salesmen of each height, in highest, middle and lowest groups of sales ability

HEIGHT IN INCHES	NUMBER OF SALESMEN								
	Highest group			Middle group			Lowest group		
	Company A	Company B	Total	Company A	Company B	Total	Company A	Company B	Total
75							1		1
74									
73				2		2	2	2	4
72	6	4	10	1	1	2	7	2	9
71	4	3	7	6	2	8	6	4	10
70	7	7	14	1	2	3	1	4	5
69	4	4	8	6	6	12	5	5	10
68	3	4	7	7	9	16	5	6	11
67	3	5	8	2	5	7	2	3	5
66	3	3	6	4	3	7	3	4	7
65	1		1	1		1			
64	1		1	1	2	3			
	32	30	62	31	30	61	32	30	62

TABLE 2

Showing number of salesmen of each weight, in highest, middle and lowest groups of sales ability

WEIGHT IN POUNDS	NUMBER OF SALESMEN								
	Highest group			Middle group			Lowest group		
	Company A	Company B	Total	Company A	Company B	Total	Company A	Company B	Total
230–239					1	1			
220–229	1	2	3		1	1		1	1
210–219		2	2		3	3		3	3
200–209		1	1		3	3	2	1	3
190–199	1	3	4	1	4	5		4	4
180–189	3	7	10	1	3	4	4	4	8
170–179	3	8	11	4	9	13	3	7	10
160–169	5	3	8	7	6	13	4	6	10
150–159	5	3	8	3		3	7	3	10
140–149	6	1	7	9		9	7	1	8
130–139	6		6	6		6	4		4
120–129	2		2				1		1
	32	30	62	31	30	61	32	30	62

With the coöperation of several interested salesmanagers, whose assistance is hereby gratefully acknowledged, the writer made such an investigation and discovered facts which throw some light upon the question.

Records were first secured from two firms, Company A, employing 95 men, selling a high grade office specialty; and Company B, employing 90 men, selling footwear. The salesmen were ranked by their respective salesmanagers according to

the commissions they earned during one year (in the one case, in 1920, and in the other, in 1921); and on the basis of this ranking they were then grouped into three equal groups, those with the highest sales records

TABLE 3

Showing average height, weight and age of men, with highest, middle and lowest sales records (Company A)

GROUPS—FORMED ON BASIS OF SALES RECORDS	NUMBER OF PERSONS	AVERAGE HEIGHT	AVERAGE WEIGHT	AVERAGE AGE
		inches	*pounds*	*years*
Highest third....	32	69.0	155.7	31.2
Middle third.....	31	68.6	153.0	29.6
Lowest third.....	32	69.8	157.9	28.8
Total company.	95	69.2	155.5	29.8
Average deviation.....	95	1.9	15.1	3.2

in group I, the middle third in group II and the third with the lowest sales records in group III. The average height and weight (clothed) of those in each group were then computed. Age was also included

TABLE 4

Showing average height, weight and age of best ten and poorest ten salesmen (Company A)

GROUP	AVERAGE HEIGHT	AVERAGE WEIGHT	AVERAGE AGE
	inches	*pounds*	*years*
Highest ten.....	69.3	157.4	31.6
Lowest ten.....	70.2	158.7	30.0

for what subsidary value it might have. Results are shown in tables 1 to 8.

In order to be sure that extremes of ability were represented in these divisions, the best ten and poorest ten salesmen were similarly grouped, with results as shown in table 4.

The statistical device usually used for discovering the degree of correspondence between such factors

TABLE 5

Showing average height, weight and age of men with highest, middle and lowest sales records (Company B)

GROUPS—FORMED ON BASIS OF SALES RECORDS	NUMBER OF PERSONS	AVERAGE HEIGHT	AVERAGE WEIGHT	AVERAGE AGE
		inches	*pounds*	*years*
Highest third....	30	69.3	180.2	44.4
Middle third.....	30	68.0	184.8	41.4
Lowest third.....	30	69.0	178.5	43.0
Total company.	90	68.6	181.2	43.2
Average deviation.....	90	1.7	15.9	6.2

is the method of correlation. This, applied to the men of Company B in terms of the Spearman foot-rule, shows that rank in selling ability correlates with rank in the physical traits as follows: height, 0.11; weight, 0.05. These amounts are so small

TABLE 6

Showing average height, weight and age of best ten and poorest ten salesmen (Company B)

GROUP	AVERAGE HEIGHT	AVERAGE WEIGHT	AVERAGE AGE
	inches	*pounds*	*years*
Highest ten.....	69.0	185.5	47.4
Lowest ten.....	69.1	182.6	43.1

as to warrant the statement that there is no significant correlation.

All these figures show no appreciable difference in height and weight among the most successful and least successful of the salesmen in these groups.

The most successful men in each company averaged about 69 inches in height and the least successful averaged practically the same. The slight fractions of an inch in difference are in all cases smaller than the average deviations. The negligibility of height and weight is still more strikingly shown by a comparison of the earnings of the best and poorest salesmen of Company B. Since the amounts were given in confidence they are not here presented. The difference, however, between the average commissions earned by the best third and poorest third is $3750; that between the average commissions earned by the best ten and poorest ten is $8000! Surely if stature were a factor in selling ability it would manifest itself among men with this wide divergence in achievement. No appreciable difference appears, however; hence, it may be concluded that height and weight play little part in determining a salesman's success. At least it is certain that the best salesmen in this group of approximately two hundred salesmen are not on the average the tallest, and that they are not the heaviest, but that they are men of medium size, averaging around five feet and nine inches with appropriate weight (except those of Company B, who are, on the average, somewhat heavier, being, on the average, older). (See tables 3 and 5.)

It might be alleged here that the reason why these superior salesmen are, on the average, of medium stature is because by the law of chance there would be a larger number of medium sized men on these sales forces. This is exactly true. The number of men of each height and weight on these sales forces follows closely the probability curve. (See tables 1 and 2.) But if, as is alleged, tallness and heaviness were a factor in superior salesmanship, the superior salesmen should be larger than the inferior ones. And the inferior salesmen should be smaller than the others. That is, there should be a preponderance of tall and heavy men among the superior salesmen, and a dearth of them among the inferior salesmen.

This condition is not found, how-

TABLE 7

Showing combined number and percentage of salesmen from Companies A and B, distributed in tertiles horizontally, according to salesmanship, and vertically, according to height

HEIGHT	SALESMANSHIP					
	Number of men			Per cent of men		
Tertiles	1	2	3	1	2	3
1	23	13	26	37	21	42
2	20	22	19	32	36	32
3	19	26	17	31	43	26

TABLE 8

Showing combined number and percentage of salesmen from Companies A and B, distributed in tertiles horizontally, according to salesmanship, and vertically, according to weight

WEIGHT	SALESMANSHIP					
	Number of men			Per cent of men		
Tertiles	1	2	3	1	2	3
1	22	19	21	35	31	34
2	18	24	19	29	40	31
3	22	18	22	36	29	35

ever. Tables 7 and 8 show the combined number of salesmen from Companies A and B, distributed in tertiles horizontally, according to salesmanship, and vertically according to height (table 7) and weight (table 8). Absolute numbers are shown on the left and percentages on the right. This distribution shows that among the superior 62 of the 185 salesmen are 23 who are in the tallest third; and among the inferior third are 26 who are also in the tallest third. Among the tallest third are 23 who are in the superior third of the salesmen; and among the shortest third there are 19 who are among the best salesmen.

There seems to be a tendency for the men of medium height to be equally distributed over the three grades of salesmanship; and for the tall and short men to be distributed somewhat less equally. However reliable this may be, the figures certainly show that there are no more tall men among the best salesmen than among the poorest.

Table 8 shows no consistent differences in weight between the salesmen making the best, medium and lowest sales records; almost an equal number of heavy men being in each group and an equal number of light men being in each group.

Additional evidence refuting the claims under consideration is contained in measures of 400 insurance salesmen kindly furnished by Mr. J. M. Holcombe, Jr., manager of the Sales Research Division of the Phoenix Mutual Life Insurance Company. These are presented in figures 1 and 2. Actual earnings of the men are not shown. The graphic presentations, however, give true pictures of the relative earnings of the men at different heights and weights. Here it is clearly shown that the best salesmen are not men of superior size.

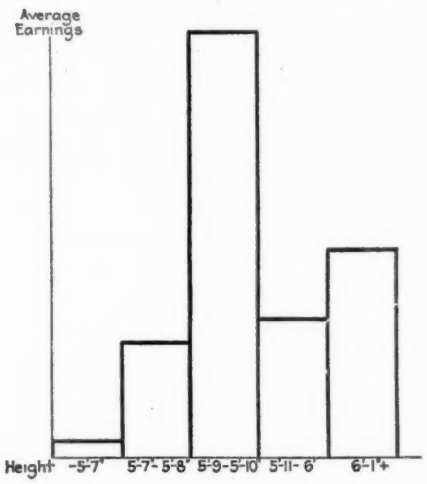

FIG. 1. SHOWING RELATIVE AVERAGE COMMISSIONS EARNED BY INSURANCE SALESMEN OF VARIOUS HEIGHTS.

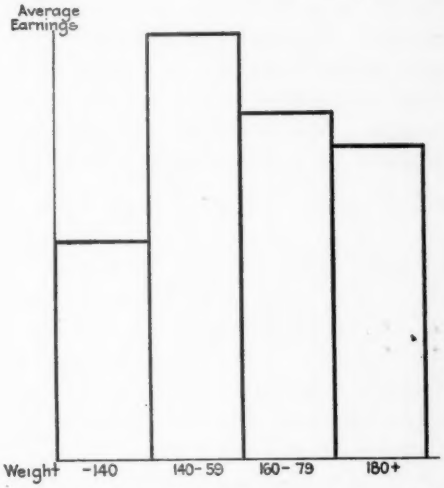

FIG. 2. SHOWING RELATIVE AVERAGE COMMISSIONS EARNED BY INSURANCE SALESMEN OF VARIOUS WEIGHTS.

True, the extremely large men sell somewhat more than the extremely small men, thus giving some apparent ground for believing in the theory that bulk in a salesman is a factor in making him "impressive." It must be remembered, however, that there are other qualities besides impressiveness, which are necessary for carrying on the duties of a salesman. Among them are energy and activity. The good salesman must be a quick mover and must call upon a great number of clients. Here the large man is handicapped by the necessity of carrying around an undue amount of weight. And the small man, perhaps because he is not thus handicapped, can partially overcome any hypothetical "unimpressiveness" due to his small stature. But the man who makes the most sales among these insurance salesman is the man of medium size, who is under neither the handicaps incidental to great bulk nor those incidental to undersize.

It goes without saying that superior salesmen may in individual cases be either large, medium or small. The question at issue in this investigation has been: Are good salesmen more frequently large? These figures, based upon measurements of 600 salesmen selling staple and specialty products, answer it in the negative.

The Vocational Testing Movement[1]

By Donald G. Paterson, *University of Minnesota*

IN DISCUSSING the subject of vocational tests with representatives of the vocational and manual training profession, I am conscious that we are on common ground. Your profession has come into existence because of the imperative need for differentiating the public school curriculum so that in spite of the enormous differences in ability, aptitudes and interests among children of each age a truly democratic educational program may be provided and still do justice to each child. Those of us who are devoting time and attention to vocational tests and measurements recognize the need for differential education hoping to improve the methods whereby school management may safely bring this about. These two lines of effort are supplementary. Progress in either field alone is dependent in large part upon the coöperative efforts put forth by the vocational teacher and the test technologist.

I shall review briefly the development of vocational tests, outline one or two of the outstanding experiments in this field and indicate in what ways your profession may experiment profitably with these vocational testing methods. In doing this I trust you will not infer that I am unduly emphasizing the matter of tests and measurements. Such is not my intention, for all tests and measurements are subordinate to the more important functions of school or shop. Indeed, tests and measurements assume importance only in proportion to their aid in achieving the larger purposes of shop and school.

Not only are tests and measurements secondary in importance to the primary training functions of the vocational school, but they are also secondary to the vocational advisor's knowledge of actual vocational *opportunities* in particular localities and in particular shops and factories. They are also probably secondary to an informed and educated interest on the part of the pupils of the real nature of the various vocations (opportunities for advancement, kind and variety of duties and operations involved in the work as well as the monetary and other equally important rewards).

Furthermore, it must be recognized clearly that vocational success depends upon a variety of independently variable factors. If success depended strictly upon one's vocational capacity, intelligence and

[1] This paper was read before the Manual Training Section of the Minnesota Education Association in St. Paul, October 27, 1922. The original paper has been slightly revised and enlarged. The writer is indebted to Dr. W. S. Foster for many helpful suggestions and criticisms.

other tested abilities then tests and measurements would be all important in vocational training and guidance. Success is not conditioned in so simple a way. It is dependent upon one's interest, zeal, industry, coöperativeness, upon one's health and physical fitness, upon financial ability to get proper training, upon the help one's family and friends can give, upon the demand for one's product, etc. Vocational advice must take all of these factors into account fully and adequately. For these reasons, it is obvious that tests are not all important but are important only in so far as they supplement and make more accurate the judgments that are made in advising a pupil to enter a training course or to take a job in industry.

It is probably desirable also to minimize the importance of tests and measurements because their newness and their novelty have resulted in such widespread interest and discussion as to cloud the real issues involved. The days are filled with nothing but Binet Mental Ages, Intelligence Quotients, Achievement Quotients, Accomplishment Quotients, So and So's Standard Scale for Measuring Achievement in this, that and the other subject. Some educators are bewildered and others alarmed with all this talk of measurement. Many are wondering whether the school is to cease its time-honored teaching function and be converted into a laboratory for the perpetration and perpetuation of forty-'leven different kinds of tests. They would not quickly regain their mental equilibrium if they knew how many million standard tests were given last year in the schools of this country.

An investigator from the United States Children's Bureau who has been surveying the methods used in the placement of children by vocational bureaus connected with the public schools recently informed me concerning the wholesale use of tests. This inspector was dumbfounded at the hundreds of thousands of tests that are being used in schools throughout the country. This knowledge of the wholesale use of standard tests should serve as a warning. We must remember that testing is dangerous unless it is certain that an intelligent and conservative use of results is the rule for none of our tests are infallible. *The test results for any given child are especially prone to error.* We cannot emphasize too much the experimental and tentative nature of the test movement at the present time.

The significance of this whole movement lies in our demand that educational courses be constructed to fit the individual child. Mass education is giving way to individual instruction. To do this safely we must have a more adequate means of determining the fitness of each child for each educational course. Tests are helping to accomplish these results.

As I see it, there are two major uses for standard tests. First, they may be used as selective devices, that is, tests may be made increasingly useful for educational guidance purposes. Second, they may be used to measure acquisition and progress of skill or knowledge. This second use is of great importance for it permits a more accurate measurement of results gained by our teaching process, at the same time affording students a more

definite incentive to make the greatest possible progress in each course. I propose to devote the remainder of this paper to these two major uses of tests.

The traditional methods of selecting people for specific tasks include the personal interview, application blank, letter of application, photograph, testimonial and letter of recommendation. A detailed discussion of these traditional methods would not be profitable on this occasion. Those interested in a careful study and evaluation of these traditional methods would find H. L. Hollingworth's "Judging Human Character" published in 1922 by the D. Appleton Co., not only interesting but highly instructive. In passing, it is sufficient to say that for most lines of work these traditional methods are highly unreliable. For certain lines of work, one could dispense with the traditional methods altogether, put the names of applicants in a hat and draw the names of the lucky applicants by chance without decreasing the accuracy of the selection. For these lines of work it is imperative to devise methods which make possible the selection of those really best fitted for the work.

The method of tests and measurements is to be contrasted with the traditional methods of selecting people for training courses and for specific lines of work. The test method recommends itself because of the greater uniformity resulting when a well defined objective scale replaces subjective opinion and judgment. Furthermore, this method emphasizes what we are prone to overlook in our daily contacts with people, i.e., the enormous individual differences existing among people with respect to the degree of any capacity.

The test method has shown theories of vocational guidance on the basis of "mental types" to be inadequate, if not misleading. In fact, the theory of "mental types" formerly held by many turns out a myth. The so-called "motor minded" type theory was not only a false basis of vocational education but damaging to the very interests of vocational education for, if true, it would lead to the segregation of feeble-minded boys and girls as the raw material for the vocational educator to work with. The method of tests has shown us that men differ one from another by fine gradations. Furthermore, there is a positive correlation between all desirable traits. This discovery has led the majority of psychologists to abandon the theory of "mental types."

In general, we may classify tests into two groups, (1) tests of potential capacity and (2) tests of actual capacity. In the first group we have a great variety of tests ranging from simple sensory-motor tests to general intelligence tests. These tests permit us, within limits, to predict or prognosticate possible future ability acquired as a result of training or experience. The second group of tests measures the extent to which a person has actually acquired skill or knowledge in any particular kind of work.

TESTS OF POTENTIAL CAPACITY

The following are typical examples of some tests that have been developed

with a view of predicting success in a given line of work: The Stanford Revision of the Binet-Simon Mental Age Scale or such group intelligence tests as the Otis Group Intelligence Tests for predicting the limits of progress along academic lines; learning tests of the substitution variety for predicting success in learning comptometry, typewriting and stenography; Thurstone's rhythm pattern test for predicting receiving ability in radio-telegraphy; Link's card sorting, cancellation and number group checking tests for shell inspectors; Link's spatial perception tests for selecting those best fitted to learn assembling work; Link's modification of the Bogardus factory test for picking dial press feeders; Thorndike's tests for the selection of clerical workers; the Carnegie Institute Bureau of Personnel Research tests for comptometry, stenography and salesmanship; the Scott Company's tests for file clerks; Spaeth's adaptation of Whipple's steadiness test for predicting rifle shooting ability; Stenquist's general mechanical aptitude tests for predicting success in shop and general science work.

In developing such tests it is necessary to analyze the work to discover the qualifications essential for success. This procedure is called Job Analysis, resulting in the setting up of Job Specifications. There is a considerable literature devoted to the technical aspects of job analysis. Job Analysis by common sense is bound to be superficial and inaccurate. It is necessary that an expert make the detailed analysis utilizing properly the technique that has been evolved so that irrelevant factors are ignored and only relevant facts are recorded, analyzed and summarized. The next step consists in selecting empirically a battery of tests for trial. Each test chosen must be shown to be a reliable and valid measure of some of the elements involved in the work. The tests are then tried out on workers of known ability to discover which of the tests show the closest relationship to the ability of those workers. This phase is called "determining the test-criterion correlation." (Correlation is a mathematical statement of the correspondence or agreement between two series of facts. For example, the correlation or relationship between the height of fathers and sons is about + 0.30. This means that fathers who are much above the average in height tend to have sons who are also somewhat above the average. Some tall fathers, however, would have sons who are actually below average in height. If the height of any given boy were directly related to the height of his father, then the correlation would be perfect, i.e., +1.00. If there were no relationship between the height of fathers and sons, then the correlation would be 0.00.) Any test that fails to show a significant correlation is rejected and the others retained. The scores on the retained tests are weighted and pooled so as to yield a single index of ability in the tests. Norms or standards of performance in the tests are then established. These standards correspond with various degrees or grades of ability in the work.

Many people have an exaggerated notion concerning the significance of what is termed a "high correlation." A correlation of +0.50 or +0.60 is said to be high. Many individuals infer from such a statement that the two series of facts are therefore closely related. They assume that the one series of facts can be utilized to accurately predict the other series of facts. For example, suppose the correlation between school marks and an arithmetic test is + 0.60. Many people would infer that Johnny who makes a score that is above average in the arithmetic test must necessarily be above average in scholarship. By no means is it certain that such will be the case. Those who are inclined to interpret correlations in this manner have failed to make a sharp distinction between the use of tests for predicting the scholarship of groups of individuals and predicting the scholarship of any given individual. A concrete example will make this distinction clear. The data hypothetical in table 1 are for 13 boys showing the relationship between the scores they made on an arithmetic test and their average school grades for one year. These boys are arranged in rank order, first on the basis of their scores on the arithmetic test and second on the basis of their school grades. The exact relationship or correlation between this test and school grades is +0.60. It is apparent that those who make high scores in the test *tend* to be the ones who receive good marks in school and vice versa. K. S. Bell makes a score of 79 on the arithmetic test and may be considered average, for six pupils make higher scores and six make lower scores. The average school grade of those above Bell's arithmetic test score is 84.5 while the average school grade of those below Bell is only 72.5. It is clear from these figures that the arithmetic test alone would enable you to select two groups of pupils, one that would do much better school work on the average, the other that would do much poorer school work on the average. This correlation of +0.60 then, would justify the use of the arithmetic test as a means of predicting the school success of groups. But what about the matter of justice to each individual pupil? That is a different matter. Kent and Grant, who actually do relatively poor school work would unjustly be placed among those who do good school work. J. Smith, on the other hand is placed

TABLE 1

Relationship between arithmetic test scores and average school grade for one year for thirteen boys in the fifth grade, Consolidated School no. 138

NAME OF BOY	ARITHMETIC TEST		AVERAGE SCHOOL GRADES	
	Score	Rank order	Percentage mark	Rank order
John Dunn.....	96	1	98	1
L. Reid.....	93	2	95	2
Don Kent.....	87	3	75	9
L. E. Grant.....	86	4	76	8
R. Torr.....	82	5	83	5
B. S. Holt.....	80	6	80	6
K. S. Bell.....	79	7	78	7
M. Weir.....	77	8	84	4
Harry Latts.....	76	9	73	10
G. Fetter.....	74	10	55	13
J. Smith.....	71	11	88	3
C. Stone.....	68	12	65	12
F. Hall.....	55	13	70	11

with the dullards, whereas his school grade is 88. M. Weir who actually makes a school grade of 84 would be classified with the poorer pupils. Such a classification would be erroneous, therefore, in 4 out of the 13 cases. From the standpoint of individual justice, it is evident that a correlation of +0.60 is not high enough to insure accuracy in individual cases although it may be high enough to use as a means of selecting and classifying groups. This illustration may seem unduly lengthy to some of you but it is necessary as a warning to those who are making a wholesale use of tests, which correlate only +0.60 or +0.65 with school or shop success. The use of such tests may be warranted but those who use them must keep in mind, constantly, the serious errors involved and should not take action on the basis of the tests alone but should utilize as much additional information as possible about each child before definite selective or classification action is taken.

Link's work in assembling a team of tests for the selection of shell inspectors is a good illustration of this method. (This work is described in detail in H. C. Link's "Employment Psychology," published by The Macmillan Company in 1919.) On analyzing the job he found that it required good eyesight, keen visual discrimination, quick reaction, accuracy of movement, steadiness of attention. He then selected sixteen tests that would presumably measure these behavior elements. After preliminary trial he discarded eight of the tests as being useless for his purposes and then proceeded to try out the other eight tests. He used an eyesight or visual acuity test, a cancellation test, a directions test, a number group checking test, a tapping test, steadiness of motor control test, and an accuracy of movement test. These tests were given individually to 51 shell inspectors and scores in each test were then correlated with a rank order of the 51 shell inspectors arranged according to their productive efficiency. Results:

TEST USED	CORRELATION BETWEEN SCORE AND INSPECTION ABILITY
*Card sorting	+0.56
Tapping test	+0.14
*Cancellation test	+0.63
Easy directions test	+0.14
*Number group checking	+0.72
Steadiness test	+0.38
Accuracy test	+0.24

The three tests preceded by an asterisk were retained as useful selective devices. Norms or standard scores were set up so that an applicant had to pass each test with a score above the "critical hiring score." The results, as described by Link, more than justified the time and expense involved.

You may be interested in an account of the Stenquist Mechanical Aptitude Tests as an illustration of a series of tests that have more general application than the specific type of tests developed by Link. Stenquist's tests used in conjunction with the so-called General Intelligence Tests give us the first concrete suggestions for a rough vocational guidance scheme. For this reason, Stenquist's work should appeal

to you as a possible line of experimentation.

The most detailed account of these tests is that given by Dr. John L. Stenquist in an article entitled "The Case for the Low I. Q." which appeared in the November 1921 issue of the Journal of Educational Research. He recounts an extensive experiment to determine the relationship between mechanical ability tests and so-called general intelligence tests and the relationship between mechanical ability tests and success in shop work and general science.

Several hundred boys in a New York City public school were given a very exhaustive intelligence rating based upon the combined results of the following well known tests: National Intelligence Tests A and B; Haggerty Intelligence Test Delta 2; Otis Group Intelligence Test; Myer's Mental Measure and Thorndike's Visual Vocabulary Test. The results of these six tests were pooled, equal weight being given to each. This final intelligence rating for each boy was called the "composite intelligence score."

These same boys were given Stenquist's four mechanical aptitude tests: Assembling Series I and Assembling Series II (each series consisted of ten unassembled commercial mechanical objects such as four-piece rubber stopper for bottles, four-piece paper clamp, toy pistol, mouse trap, lock, door bell, etc.) and Picture Tests Series I and Picture Test Series II. Picture Test I contained 78 problems, each involving the identification of one of five pictures belonging with or a part of one key picture. These problems were concerned with various mechanisms, tools, toys, machines and parts. Picture Test II was similar to Picture Test I but involved some language ability and was supposed to involve "mechanical reasoning." His evidence indicates that boys who score high on one of these tests tend to score high on any of the other three tests. The claim is made that a composite score on all four tests is a good measure of "general mechanical aptitude," the word general being used because the tests do not pertain to any special trade.

The composite score on the four mechanical tests correlates +0.21 with the composite score on the six intelligence tests. This shows that an individual's position in a general intelligence test is largely *independent* of his position in a general mechanical aptitude test.

Stenquist also presents data concerning the correlation between his mechanical tests and the judged ability of boys to succeed in shop work. He gives correlations for twelve different groups of boys (from 14 to 53 boys in each group), the average correlation being +0.71. Correlations of the same magnitude were found between mechanical test scores and judged ability in general science work. He concludes that the mechanical tests detect to a marked degree the same abilities that are important for success in shop and general science work.

The lack of any very close relationship between scores in the mechanical tests and scores in the intelligence tests is important. Stenquist's data permit us to identify at least four groups of boys who possibly should be

given radically different kinds of education:

Group A, comprising 26 per cent of the boys, made scores above average in both kinds of tests. This suggests the possibility of giving mechanical as well as academic training to such boys with a view of educating and training them for the scientific, engineering and technical professions and trades.

Group B, comprising 23 per cent of the boys made score above average in the intelligence tests but below average in the mechanical tests. It is possible that this group of boys would profit most from a purely academic training designed to fit them for the more literary type of profession and vocation such as law, ministry, certain kinds of social work, business, etc.

Group C, comprising 20 per cent of the boys made scores above average in the mechanical tests and below average in the intelligence tests. It is possible that this group would be benefitted most by receiving a thorough-going trade education with as little emphasis as possible on the traditional academic subjects but supplemented by social-economic courses designed to produce a trained citizen as well as a skilled tradesman.

Group D, comprising 31 per cent of the boys, made scores below average in both kinds of tests. The desirability of equipping such boys with specific habits that would enable them to engage in a wide number of semi-skilled occupations is suggested. Possibly neither thorough-going trade education nor intensive academic education is best suited to the needs of this group.

The above classification should not be looked upon as any definite or final scheme of educational guidance. It is worth while only in so far as it directs our attention toward the possibility of developing a differentiated curriculum that will be better fitted to the needs of individual children. In any such scheme, account would have to be taken of the child who seems to be lacking in mechanical and academic aptitude, yet who seems to possess an unusual knack for handling people and for getting along with people. It is possible that Thorndike's suggestion concerning the existence of three kinds of intelligence—abstract, mechanical and social—is correct; at least it would seem to be worth while practically.

TESTS OF ACTUAL CAPACITY

There are two chief varieties of actual capacity tests now on the market. One variety is known as the Standard Educational Measuring Scale, the other as the Trade Test. The following is a list of some of the better known educational scales: Courtis' Standard Tests in Arithmetic; Ayres' Spelling Scale; Van Wagenen's History Scales; Gray's Oral Reading Scale; Ayres' Scales for Measuring the Quality of Handwriting; Henmon's Test for Measuring Ability in French and Latin, etc. Some of the typical Trade Tests are: Oral Trade Test for Lathe Operators; Picture Trade Test for Milling Maching Operators; Performance Trade Test for Truck Drivers; Thurstone's Trade Test for Stenographers; Chapman and Toops' Written Trade Test for Bricklayers. Those of you who are especially inter-

ested in this variety of actual capacity test are referred to J. C. Chapman's "Trade Tests" published in 1921 by H. Holt & Company. It is well to point out, what some have learned only through bitter experience, that trade tests, even more than other types of tests, are likely to need revamping to suit new conditions or slightly changed ones. To use the army trade tests directly in shop or school would be to court disaster. These trade tests are valuable chiefly because the validity of the methods used in their construction has been thoroughly demonstrated. These *methods* are now available for application by the expert. The problem of coaching is also a real one. This problem can be solved by the industrial school by multiplying the number and variety of questions and tasks to the point where they thoroughly sample every phase and element of the course. Unless this is done the teacher is very apt to teach his students to pass a few tests rather than to do an all around teaching job.

The chief advantages of educational scales and trade tests may be listed as follows: (1) They contain only those questions and problems that actually indicate the capacity already acquired in a given field, (2) they are impersonal, objective measuring instruments that can be applied by any careful examiner whether or not he is skilled or proficient in the particular field, (3) there is a standardized uniformity in the time allowed each candidate who takes the tests, (4) there is a universal standard of comparison available so that all candidates are judged by the same standard.

Such scales and tests are valuable for selecting individuals for any job or for promotion to another job where success is dependent upon the possession of skill or knowledge already acquired. From the standpoint of the school, this means that promotion can be based on a child's ability to pass standardized tests in the phases of the subjects he is just completing. This method can be made sufficiently elastic so that a child can progress at a pace suited to his particular abilities.

This use of actual capacity tests, if properly devised, standardized and administered, should serve as a decided incentive to each student. Courses, theoretical or practical, could be blocked out with the essential elements or steps clearly defined. Each child could progress as rapidly as he could pass the standardized tests for each element or phase, known as "projects." Thus a series of definitely outlined goals are set up. The establishment of such goals, in itself, is a real incentive for intensive application to work in hand. This type of curriculum making or shop work planning is described in great detail in C. R. Allen's "The Instructor, the Man and the Job" published by J. B. Lippincott in 1919. A practical application of this plan is illustrated in a bulletin entitled "A Plan of Apprentice Training" issued in 1920 by the Scott Company, Personnel Consultants, Philadelphia.

From the administrative point of view, actual capacity tests possess the double merit of providing a more powerful incentive to each child toward his mastery of each element or project in his course as well as pro-

viding a more accurate method of classifying pupils according to ability to progress in the various subjects.

I would direct your attention to one feature of trade test technique that can be advantageously utilized in the preparation of the usual school examination. This is the principle that brevity in the answer should be required whenever possible. The examiner must so prepare his questions that a complete and adequate answer can be given in a word or phrase. By utilizing this principle it is possible to increase greatly the number of questions usually included in an examination, to decrease the time of reading and correcting the examination papers and to reduce the variability in grades assigned.

The traditional examination calls for descriptive, explanatory answers necessarily long and involved. Because of the time consumed in merely writing such explanatory answers it is necessary to limit the examination to a relatively small number of questions. The range or comprehensiveness of the usual examination is thus limited. Furthermore, a premium is placed upon the judgment and patience of the one correcting the papers.

The newer type of examination substitutes expertness in the preparation of the questions in place of expertness in grading the answers. An illustration will make this clear (this illustration is taken from H. A. Toops, "Trade Tests in Education" published by Teachers College, Columbia University).

Traditional Question: Describe the origin of casein. Answer: From one sentence to one page, depending upon the number and variety of relevant and irrelevant facts given by the child as well as upon his command of language.

Newer Type of Question: (One-word answer)—Casein comes from.....(Multiple Choice Form) Casein comes from (meat, milk, corn, fruit) (True-False Form) Casein comes from meat—True False.

In the one-word answer form the child simply gives a one word answer. In the multiple choice form he merely underlines the correct one of the four works in parenthesis. In the true-false form the child underlines true or false depending upon the truth or falsity of the statement. In the last-mentioned form it is necessary to have a large number of sentences, some true and some false. Obviously one could get half of them correct by sheer guessing so it is customary to score these sentences "right minus wrong." For example we have 20 such sentences and a child answers 10 correct and 10 wrong. His score would be 0. It is best to warn the students not to guess in case they do not known the right answer. It is then permissible to penalize all wrong answers by deduction from the number of right answers on the assumption that mis-information is worse than no information. In this way the effects of guessing are counteracted and the ideal of possessing positive knowledge is developed.

In closing I wish to describe one of the most elaborate schemes of vocational guidance now operative in this country. It has the additional merit of being the safest method in the present state of our knowledge. I refer to the use of vocational testing methods in vocational trial courses as practiced by the Manhattan Trade

School for Girls in New York and described by Toops. Every second week a new group of 100 to 120 eighth grade girls come to this school for a two weeks' instruction and testing course. The process of instruction and testing is divided into commercial and industrial work. (1) The commercial work and commercial tests include: English—three compositions and a final test in dictation and composition; Arithmetic—single problems; Penmanship; Switchboard Operating—performance lessons and tests; Filing—three lessons and tests covering alphabetical filing, geographical filing and telephone directory work; Stenography—series of lessons and tests up to and including the construction of simple words and sentences; Typewriting. (2) The industrial work and industrial tests include: Hand Sewing—instruction and test, hemming handkerchief and making a child's cap; Power Machine Sewing; Pasting—instructions and test, mounting cloth triangles on cardboard and making a paper covered pasteboard box.

The ease and rapidity with which a girl can learn a given piece of work is the index of her aptitude for that work. The girl is given further intensive training or is placed in a position in accordance with her showing in the various phases of this two weeks' instruction and testing. This type of vocational guidance utilizes the trial and error method of determining vocational fitness and is securing good results because the usually expensive and wasteful trial and error method is here standardized, closely supervised and carefully controlled.

We accept the progress of invention and science characterizing life today as the result of painstaking research work and it is safe to say that progress in the field of vocational education is equally dependent upon thoroughgoing research. In my opinion the research work now being done in the field of vocational tests can be profitably utilized and furthered by the vocational educator who is imbued with the idea of progress and is sobered by a realization of the technical requirements of real research. With this in mind, I commend to your profession the earnest study of the vocational testing movement.

Applications of Psychology to Industry and Business[1]

By C. S. Yoakum, *Carnegie Institute of Technology*

Summary: The need for standard psychological terms in industry and business is pointed out. Illustrations of the present unsystematized use of psychology follow. The conception that on the human side, industry and business have two functions, induction and maintenance, to perform, will make both the need for psychology and its application clearer. The general method of job analysis must be broken up into specific functional job analysis methods. Typical induction and maintenance problems that can be solved by the application of specific psychological principles are given. The problems presented show the need for the expert in the personnel field. The complicated nature of personnel problems has led to over-simplification. A description of a mental alertness test used to predict selling success to illustrate this. Industry and business are deeply interested in expert advice if scientifically sound.

I

SOME will say I have been overventuresome in the selection of a subject. They will tell you that business men and industrial executives do not yet admit there is such a thing as applied psychology; that they still prefer the more 'practical' "knowledge of the workings of the human mind" in the performance of their daily round of duties. Yet in this day, to take but a single illustration, it has already come about that patent medicine advertisements are displaced by full-page announcements of guaranteed methods of analyzing one's personality, of curing weak wills, and of training one overnight to become a major executive in large corporations. Self-styled character analysists number their clients by the thousands and are even sought by government agents lest they forget their income tax. These pseudo-psychologists are already deep in the harvest. In the voluntary clubs, meeting weekly in practically every large city in our land, the seriousness and earnestness of speaker, of subject, and of auditor greatly impresses one. "Though he slay me, yet will I trust in him." Some reputable business

[1] Read before the American Psychological Association and Section I of the American Association for the Advancement of Science, December 28, 1922, at Boston, Mass.

men send their subordinates to these places to be analyzed and to be directed into the paths of certain success.

Fortunately for business, experience rather rudely at times corrects this lack of balance; but it frequently leaves executives less prone to turn to systematic psychology for help.

Industry and business are yet undigested mixtures of broad generalization and minute detail. They have proceeded largely on the theory that the immediate job must be done at all hazards. An enormous percentage of time and energy is spent on temporary adjustments. Failures are removed if their daily task slips. The rationalizations of the successful are accepted. The successful solution and the failure both become business or industrial policy. This opportunism leaves little residue for the psychologist to analyze. Somewhat more now remains for the economist to examine.

In considerable measure, the economist has pointed out the established in the thought of business men the major terms in which he is interested. Where he has established these cures to thought in the texture of business language, his scientific task has become easier. The development of agreed upon meanings makes it possible for him to utilize data direct from the field of investigation. The widespread discussion of economic effects preceding prohibition showed a uniformity of language and concept. That the economic phases proved less fundamental than were forecast, merely indicates too limited an analysis. The phenomena of prohibition, liberty bond sales, national safety week, etc., show that as the economic explanations break down, sociology cannot provide general concepts and phrasing suitable to continue the discussion. The psychologists' thoughts are either inarticulate or inchoate on such subjects. The few recent journalistic attempts to popularize the term "intelligence" have not materially improved our situation in this respect.

Though psychology has been slow to develop concepts and definitions that business and professional men might learn, it has several spheres of influence and territorial mandates by means of which peaceful penetration is being effected. The scientist is placing greater reliance on our findings. Coöperative projects that include psychological data are developed with the physicist, the chemist, and the biologist. Border line problems have attracted a mutual interest. Certain fields such as economics, sociology, education are attempting their own reconstruction by means of psychological concepts. A notable recent attempt of this sort is Dickinson's "Economic Motives." The creation of a stable social psychology will prove invaluable to business and industrial psycho-technology. Education like business has scarcely been conscious sufficiently long to profit greatly from its study of psychology. Other professions have in some measure undertaken to supply their members with psychological knowledge. Business and engineering schools are, it is true, approaching the subject with caution. These last, however, constitute a method of approach to practical situations that the psychologist can well consider care-

fully. It is to be regretted that most courses in psychology of this and of that fail to function as a vehicle of real psychology. College students of psychology should constitute another avenue, but they do not. Lastly, hard and honest work by the psychologist on problems brought to him from business and industry will slowly prepare the way for more vital investigations now untouched.

Already many facts and methods in the sensory, motor, affective, volitional, and intellectual fields, are steadily made use of or rediscovered in industrial processes. The findings of the psychologist and the physiologist, through the physician, and less frequently directly through the employment of psychologists, are made the basis of modified environments or working conditions in factories and offices. Vision, audition, and other sensory processes are considered in the construction of buildings. Ventilation and heating observe psychological as well as physiological principles. In the acquisition of motor skill on machines, the consideration of the optimum speed of the machine has taken on several aspects that examine the abilities of the human operator. We are, in the main, past that stage of industrial efficiency where all the typewriting machines in a room were geared to the machine of the fastest operator and as the slower dropped out through increase of errors or fatigue they were fired and new operators took their places. Human stresses and strains are calculated. Farmer reports an instance where excessive breakage was directly traceable to two points in the routing where poor physical conditions and bad human relations respectively existed. The labor department of a large rubber factory found excessive turnover in two divisions due entirely to the nagging attitude of the foremen. Affective conditions have been discussed most freqently under the heads of monotony, need for variety, importance of rest periods, and creating interest in the work. Rest periods have proved valuable in the laboratory and in the shop. Certain plants shift the workers to different machines or operations mornings and afternoons or more frequently. The superintendent of a shop where girls in groups of eight and ten perform a chain of operations finds that bobbed hair, silk waist, high heeled girls that like dancing and movies, and the more quiet, less extreme fashion girls who patronize dancing and the movies less, work better when in separate groups than when mixed.

The applications already in use but not listed are more numerous than those named.

II

To keep our bearings, let us assume that, *on the human side, industry and business are attempting to perform two functions, induction and maintenance.* We will not argue the point. It may well be these are simply secondary to the ideal function, developing men. If we center our attention on profits, more hogs, more corn, more land, maintenance may be the primary human function and induction secondary. The present interest in immigration may be interpreted either way, though scarcely as representing an intense desire to develop men.

The functions of induction and maintenance recall primitive group functions. Taboos and customs held this simple group together in the pursuit of a common aim. The young and some few aliens were carefully prepared for admission to the group and the initiation ceremonies were often elaborate. The high school boy who had been rated as superior by tests and who approached a prospective employer with the remark, "I am a superior youth," undoubtedly felt himself quite as ready to enter the adult group, as did the primitive boy who had just brought down his first big game.

The objective of every business and industrial organization is to maintain as compact, loyal, and efficient a group as possible. The first attempts to realize this aim resulted in some instances in an over-emphasis of certain factors. Paternalism crept in. Under the former method, the human machine was inspected by independent private detective systems, by paid spies, and by foremen. Any piece was scrapped when he became an inefficient or dangerous element in the group. Today the nature and movements of the group are being analyzed and studied by the application of increasingly scientific procedures.

The former all-inclusive method of job analysis is breaking up into a series of analytic processes, each of which is directed toward some definite purpose. Whether the particular problem for a job analysis be some special set of specifications or have the more general meaning, its reference is primarily toward the assembling of data for efficient maintenance. Instead of for mere general knowledge detailed specifications have actually been written for functional division of responsibilities, for channels of information (and routing), for classification of jobs, for lines of promotion, for working conditions, for personal qualities needed, for training, for wage payment methods, for technique and improvement of technique, for specific job duties, and for hiring.

In contrast to the list of applications of psychological data from sensory, affective, etc., fields given above, I believe we have here a method that will enable us more intelligently to draw from psychology the material needed for business and industrial purposes. Special problems, psychological in nature, arise in each instance as we read over the list. The learning process, the defining and grading of responsibilities, the interrelations of personalities for two separate jobs, the nature of promotion, the social status of a job, etc. In the pure research laboratory, such a classification would usually be worse than useless. In the field laboratory, it has proved its value in one important way. We can bring the technical terms of psychology to the business man related to things which concern him.

We may generalize the procedure in setting up each practical problem after the application of job analysis in the following way. The job analysis method enables us to write definite descriptions of each job. These are the instructions for our human subjects. The factory or office layout gives us the apparatus. Results

appear in amount of work done, quality, time spent, tolerance of work, etc.

The 'doing the work' jobs give us the laboratory animal *par excellence*. The supervisory and planning jobs are more difficult of treatment. In a period of labor shortage, many of those hunting work will not accept offers of work in the labor gang. A slight revision of the job title to show that it requires some skill, will overcome this prejudice. What the laborer wanted in the way of a higher social status has been supplied.

A similar situation occurred in another company. The problem of leveling demand over the fiscal year is one common to many lines of business. The Blank Manufacturing Company is popularly known to have been able to maintain almost a straight line of production over each fiscal year in recent years. When the demand for stickers, tags, etc., falls off, the girls are taught to make jewelers' boxes and lines of goods for which a demand can be developed to be supplied at a different period during the year. The company mentioned, following the same line of reasoning, undertook to re-distribute its workmen according to demand. They found upon examination that extra machinists, such as milling machine, punch press, and die setting operators, were needed at a time when the molders in the foundry had little to do. They persuaded the molders to take work at machines during their slack period. This first stage of the labor adjustment proved entirely satisfactory. When the increase in demand necessitated an enlargement of the force of molders again, it was impossible to get them to leave their machines and return to their former job. The differences in conditions of work and in status of the job proved more acceptable to the humans who had experienced both jobs. The advantage in pay which was with the molders was not sufficient to offset the new and better liked status.

In both cases cited the set-up of the experiment and the results are clean-cut and specific. The changes produced in the human factors are changes in attitude towards the jobs and are plainly brought out by the revised job title in the one case and by the wholly new set of working conditions in the other. More difficult problems of human attitudes and of relating human personalities to work are indicated below.

A large manufacturing concern runs a four year apprentice school. Several hundred enter each year. The courses in the main bear directly on their possibilities of advancement in the shops. Work and school move back and forth in close adjustment. Problems of attendance, of taking the work seriously, of appreciating it as preparation, are, according to the supervisor of training, as frequent as in any high school. Conferences, talks, and intimate individual discussions produce little effect. Young men in the advanced work also attempted to explain the value of the work and to persuade them of its importance. They too failed. This indifference seems to disappear at eighteen and nineteen. An understanding of the significance of their program is then more easily obtained.

We put some three hundred of these men through three hours of the usual tests but found our sieve too coarse to discover the differences indicated. The problem is a broader one of genetically changing mental attitudes in mental dimensions other than those measured. Pertinent educational suggestions could, nevertheless, be made to the supervisor.

Personality traits and human qualities present significant factors in the forming and maintaining of a compact group. Many attempts have been made to predict the nature and qualities of persons that mix and form workable units and those that when mixed form highly unstable compounds. We have succeeded in isolating certain describable elements and in setting up some few compounds that have remained stable over a considerable period of time. Our synthesis of the life insurance agent has worked fairly well in certain instances. The manufacture of clerks is said to be commercially profitable. The consistency of tests, ratings, and occupational distinctions argues for the possibility of sound conclusions with further refinement of method.

A brief description of a case study, to be published by Miss Bills, will bring out a reason for many low correlations between personality traits, intelligence tests, and success. For the job of manager of a retail store, one of a chain, we had a comprehensive job description, standardized store lay-out and procedure, and fairly well developed efficiency standards. Thirty-five of these managers were given tests and were asked to rate each other on the following items: 'general value to firm,' 'getting work done,' 'ability to develop men,' 'leadership,' 'character,' intelligence,' 'appearance and manner,' and 'initiative.' While we were writing job descriptions, two managers were observed to present a decided contrast in personality. Manager X is brilliant, unsystematic, careless, a good mixer, makes hasty judgments, swears readily and is very active. Manager Y is a plodder, methodically inclined, figures a great deal and is not a good mixer. He is slow in deciding questions and does not use impulsive or explosive language.

The composite ratings of thirty-four managers place Managers X and Y in adjacent deciles in 'getting work done,' 'intelligence,' and 'initiative;' two deciles apart in 'appearance and manner;' three, in 'character,' (which is construed mainly as personal characteristics); five, in 'ability to develop men;' and seven deciles apart in 'leadership.' Up to this point, the composite rating for Manager Y, the plodder, is always lower than that of Manager X. The two managers are rated by their associates in the same decile for 'general value to the firm.' On this item, they are rated in the ninth decile. Ratings of home office executives and net profits of the two stores confirm this standing. Individual test results seem to confirm certain of the descriptive terms used above. Manager X, the brilliant and unsystematic manager, is shown to be more rapid in movement, less sure in reflection, much less persistent, more highly conscious of self, and has himself less under control than Manager Y, the quiet plodder. The mental

alertness test shows a greater difference than the ratings indicated. Manager X has a much higher test score.

A re-examination of the experimental situation reveals the explanation. The job instructions for managers have been sufficiently broad to allow two procedures in the operation of stores. Manager X plunges and his 'merchandising sense' is right more frequently than wrong. Manager Y uses all instructions in the literal sense and succeeds as a merchant because he knows the movements of his stock at all times. The head office of the chain exerts a steadying influence to prevent temporary bankruptcy in the one case, and issues wise instructions that are followed in the other.

Our experiment has emphasized the fact that any particular constellation of human qualities need not correlate highly with a specific success. Different sorts of people succeed under the same job title. This discrepancy between 'qualities for success' and 'success' decreases as we approach 'doing the work' jobs. Eliminating the conditioning factors of monotony, fatigue, etc., we shall find that the hiring specifications can be written more directly from the job descriptions as the limitation of variety in duties increases. Careful consideration must be given to the varieties of operating specifications possible.

The experiment also sheds some light on the widespread belief in compensation of human qualities. Both managers are weak in certain respects and the qualities in which they are strong do not compensate for these weaknesses. Two factors cause the apparent compensation, the directing influence of the home office and the wide difference in methods employed. We may recall here Farmer's revision of the idea that there is one best series of motions for a job; Ruml's conception of the worker-in-his-work; Mrs. Charters' and Thorndike's investigations of the variant methods used by students in getting their lessons; and the psychiatrist's use of the term 'adjustment.'

This chance method of selecting a procedure on the part of the business man does not always bring success. In one instance where it operated fairly well for some twelve years, the executives began to feel that somehow the old job specifications and the procedures developed under it were not producing results. We spent over six months in analyzing out the functions required and in re-writing specifications. The executives whose duties were materially changed have found the new organization much better adapted to their abilities than the old. As we predicted, certain of the executives have adjusted more easily and more rapidly than others.

Brief mention should be made of those instances in which the adjustment demanded is more severe. We undertook some time ago the job of making a 'high power' salesman over into the president of a corporation. The writing of specifications and re-charting of functions required a small volume. The striking point is the behavior of our salesman in his early efforts to be an executive. Picture a young man about thirty-four, blond,

with all the Blackford traits of a blond (chance plays into one's hands at unexpected moments). One is drawn to him at the first meeting and this early liking becomes stronger with acquaintance. If we abstract ourselves from this attraction, from his well adjusted social status, and his unusual ability as a salesman, and look fixedly at his behavior as a president, he appears as one temporarily mentally disordered. He is halting and uncertain in his opinions. He is emotional and fretful in his judgments of associates. In some moments, he appealingly asks for help and in others would scrap the whole program. The prognosis is good, but the business lives of others are in danger.

One or more cases showing definite derangements and associated with personal mal-adjustments in the office or factory appear in every one of the groups examined. "Forditis" is a specific disease entity known to physicians in Detroit.

The Psychology of Report is scattered throughout the problems of management, from the conferences on such national events as the recent railroad and coal strikes to the reports of the day laborer, his foreman, and the employment manager on why he resigned, was discharged, or laid off. Three conversations or sets of reasons are difficult to reconcile or classify. Reliable reasons for leaving are of unusual importance for nearly every problem in maintenance. Through these, properly analyzed, the pulse of the group is often best discovered. Preliminary analyses of over one thousand turnover records, reported by Mr. D. R. Craig in our Bulletin Number 7, show that reasons for leaving may be classified into reliable such as 'died,' 'dishonest,' unreliable as 'other position,' 'stay at home,' and partly reliable as 'reducing force,' etc. A detailed examination of some sixty cases from six months to a year after the resignation or discharge leads us to believe that the term partly unreliable may be applied to practically all of the 'reasons' obtained by a company where systematic arrangements for interview of exits is not in force. The figures in all attempts to study turnover to date do not therefore describe the situation in the company or in the community with the clarity and preciseness necessary. The situation nevertheless, presents a well defined problem for the application of psychological technique. The solution should bring us at once a standardized terminology, an improved method of interview and examination, and uniform methods of record.

III

Induction concerns the sources of supply for new members of the group, the weeding out of those considered undesirable, the examination of the pre-group training and ideals of those who enter, the placement of these new recruits, the preliminary training, the follow-up necessary to determine the adequacy of the induction function itself. The methods of induction into the major group are applicable to transfers from one unit to another within the whole. Careful induction methods reduce the number and importance of the maintenance prob-

lems and are eagerly sought by executives in all lines.

Several persons working together on identical jobs quickly place an emphasis on individual capacity for performing the operations required. As efficiency standards appeared, it became evident that the operators on any particular machine showed very large individual differences in the nature of output. Some of these were so low in efficiency that they were immediately removed from the group. They had to be replaced by other workers, and the desire to raise the general level of success on each particular machine began to influence selection. This recognition of individual differences now permeates all operations from doing the work, supervision, up to executive and planning functions. Today we are confronted by the almost universal request for methods of selection that will predict increasingly higher percentages of successful operation in every major and minor function of business and industry. Selection, of course, does not cease with induction into the group.

We are not only asked to predict efficiency in these varied functions, but we are also asked to predict length of stay; we are asked to predict those personal characteristics which will conform to the personalities of those already in the group; we are asked to predict moral and social qualities that will conform to the moral and social status of the particular business or industry. No psychological tools exist for most of this work.

The contrasting atmosphere of two department stores picture to us at once the ideals or conflict of ideals of the executives, and automatically write different hiring specifications. Here in New England, as elsewhere, an examination of offices will reveal a similar situation. In some, no matter how intelligent or efficient the applicant, if she does not conform to the requirements of dress and general appearance which proclaim her of a certain restrained social status, she has no opportunity for employment. In the same town, an office may exist where she can readily find employment with those of her kind. Similar differences can be found in any pair of factories under different managements.

The ethical standards of one group differ from those of another group. An executive resigned a position paying him twenty-five to thirty thousand a year to go back to a position at six thousand primarily because he would not conform to what he considered the lower ethical standards of that business. He distinctly felt himself a misfit in the group. Instructions to certain employees and customs of the plant are accepted as business methods, but are carefully concealed from view when the outsider is present.

In investigating this primary problem of induction, the problem of selection, we have collected masses of statistics on the most readily procurable personal and social data. Miss Grace Manson, an assistant in the Bureau, has recently brought together some of this material on over thirteen hundred life insurance salesmen. I quote from her report some of the data on two groups, the poorest

producers and the best. The figures are medians. The first set of figures concerns items as they stand at date of contract. Age at time of contract, poorest group, 33.1 years, best, 33 years. Height, 5 feet 9½ inches for both groups. Married, 65.2 per cent and 65 per cent. Number of dependents, 1.8 and 2. A slight percentage exists which favors common school and college men with a somewhat higher percentage against high school men. The following items show low significant differences between the two groups. Years out of school, 13.8 and 16. Number of previous jobs, 3.8 and 4.5. Longest time on any previous job, 6.4 and 8.7 years. Club memberships, 2.1 and 4.7. Different kinds of these, 2.5 and 3.6. Offices held, 1.3 and 1.0. Life insurance carried at time of contract, $2400 and $5000. Years of other selling experience, 0.6 and 3.5.

The general tendency is in the direction of acceptance of social and community responsibilities on the part of individuals in the better group, though no single item shows a high significant difference. The length of service on present job is 2.8 and 8.0 years respectively. Eighty per cent of the best group are salesmen in urban territory; 45 per cent of the poorest group sell in a similar locality. If we hold these two significant items constant, the Pearson product moment coefficients for the entire group, are all positive, but low. On the basis of these items, scoring methods are devised by the different companies that act as guides in the interviewing of salesmen.

A survey of different types of selling again indicates that as the variety and complexity of duties decrease accuracy of prediction increases. More people out of the general population can do the work, but fewer will try or will stay long enough to succeed.

A rough rating of fourteeen different selling jobs on the basis of ease of following instructions and degree of complexity of instructions gives us a classification that we can compare with median mental alertness scores. For routine selling, we find medians in test scores of 65, 70, 73 and 77. Semi-specialty selling has medians of 78, 79, 80, and 83. Office specialty sales and insurance groups have medians of 90, 92, 95 and 98. A real estate group has a median score of 101, and an engineering sales group, one of 120. On the same test, medians for students are as follows: First year graduates, 124.6; college seniors, 118; superintendents, supervisors and teachers, 108.6; high school seniors, honor students, 108.6; high school sophomores, 75.4; night school (boys), 62.6, (girls), 51.

The mental alertness tests alone give no significant relations between score and degree of success in selling. They point out with considerable accuracy the relation between amount and complexity of knowledge required by the job specifications and the differing degrees of the abilities measured required to master the instructions. From them, we can establish critical points above and below which either ability in excess of requirements are obtained or too little exists properly to master the

details of the selling job. These contrasting critical points are exhibited in part in correlating test score with length of service.

Several sales groups with the lower median scores give correlation coefficients between length of service and test scores, total group in each case, around −0.46. We can set an upper critical score at once for these groups. The analysis of data from sales groups at the opposite end of the scale shows correlations positive and high, +0.70 and +0.85. The details of such investigations are more complicated

We investigated as carefully as the data would allow a group of three hundred salesmen who sell an office specialty. Differences of location, previous experience, etc., were not examined for this group. Length of service and production were considered in relation to mental alertness tests. Three groups were made, one for managers, one for active salesmen, and one for inactives or exits. The average length of service for managers was practically eight years; for active salesmen, one year and six months; and for inactive salesmen, one year and three months. The production of these groups during the period of active selling was, men now managers, 105 per cent of quota; present active salesmen, 95 per cent of quota; and for the inactive group during its selling period, 65 per cent of quota. The average test scores for the groups were respectively 74, 69, and 73. If we limit the figures on managers and active salesmen by cutting off those who are new, that is, below the average length of stay, the test score figures are 76, 60, and 73. The average score of active salesmen is kept up by new blood. The correlation coefficient for the entire group of three hundred between length of service and test score is 0.02. If we again cut out the relatively green salesmen, the coefficient becomes +0.50; and for active salesmen alone, omitting managers, it is +0.46. A certain part of the higher score men among the new men evidently stay on as salesmen but the seasoned sales group has the lower average, 60 against 73 for inactive salesmen and 75 for managers. If we examine the inactive sales group for which we have test scores, we find the coefficient is −0.42. The tendencies are in opposite directions.

The correlation of length of service and production is +0.17. The correlation of test score and production is −0.08. Two tendencies are shown by the figures as a whole: the tendency to increase length of service with rise in test score after the early trial period and the tendency of test score to drop with length of service of those who become inactive. Though we lose early many of the men making the higher scores, the very low score men do not stay on either. This is further shown by following the lowest quartile of active salesmen through another year. There are nineteen of these on the active list with test scores. Seven became inactive by February of the following year and eight more by July. Four continued. Two of these were below the average in production and two slightly above. None of the managers had scores as low as any of these nineteen. Further examination indicates, we may safely set a lower critical score for salesmen

at this point between the first and second quartiles of the active group, about 50 on the test.

I have set this out at some length since it illustrates what happens in the use of a mental alertness test in practically all cases where turnover and promotion are involved. Once in a large number of trials, the first scatter table will indicate the prediction either by a significant correlation or by a critical score. Usually, however, one must wait on time or analysis to write his predictions. In using the mental alertness test with clerical workers, the field to which it is most readily adapted, the same considerations appear. In comparing an independently selected group of best stenographers from several firms with as many failures, there is no overlapping of scores. But in a general group hired and fired as is ordinarily done, adapted to their working associates by trial and error, promoted and rated through pleasant relationships, the coefficient will ordinarily be nearer zero.

We are past the period when it is necessary to demonstrate the usefulness of a mental alertness test. I have undertaken rather to illustrate a few of the pitfalls into which the unwary and inexpert may fall. Space will not permit us to discuss here the probable factors and human qualities that do correlate with degrees of success. Within a broad band of jobs with similar requirements as to difficulty of learning, rate of learning, and complexity of instructions, mental alertness of the sort tested at present, ceases to be a factor. It is further quite evident from these illustrations that selection factors in the function of induction are not dependent wholly on individual differences as at present measured.

Although individual differences are, as shown, of considerable importance, other elements that keep the group compact will make or mar the most ideal selection imaginable. To illustrate: the average length of service in three companies doing the same work, of approximately the same size, and with equally good physical environments, is respectively 2, 5, and 10 years. No single rule of selection will operate under these disparate conditions.

The psychological and social problems of induction are not all capable of solution in direct contact with the problems of group maintenance. The personnel research department within any plant or office can apply psychological facts and methods and obtain much valuable information regarding sources of supply, social status, mental ability, preliminary training, etc. Without coöperation on the part of the educational institutions much of their work will be of little avail. I have elsewhere indicated the nature of some of these coöperative problems.[2] University laboratories and public foundations should supply the unbiased research and critical correctives in these analyses of human nature fundamental to both induction and maintenance.

[2] Basic Experiments in Vocational Guidance, Journal of Personnel Research, Vol. I, No. 1, May, 1922.

IV

I have suggested that psychology must make its own terms and concepts familiar language for business and industry. It should not wait on efforts of business men or industrial leaders to find for themselves a way into our science. Business and industrial groups center their attention on particular aims. These may be the production and sale of special products or the performance of a service. To do so they must continue to exist as groups. The two major human functions of such a group, are induction and maintenance. This form of envisaging the field should make the application of psychology less sporadic than heretofore. The refinement of job analysis into a scientific method will focus the psychologist's attention on the particular aspects of psychology desired and give him the tools needed for special research.

The supply of technically trained personnel men and students of psychology is woefully inadequate. I have not yet found a sophomore physicist or chemist managing production or directing a research laboratory in a plant. Nor has anyone convinced me that it improves the standing of psychologists or the interest of psychology among college students, when sophomores, engineers, accountants, treasurers, superannuated plant superintendents, and persons so disagreeable they cannot get along elsewhere, are assigned the job of managing personnel in office or factory.

The research-social type of student is required. There is needed the ability to put in consecutive form heterogeneous data, to reach conclusions that are scientific where that is possible, to reach other conclusions where the data are scientifically inconclusive, but to distinguish for himself, at least, between the two sorts of conclusions. The restrained, extroverted personality is important. The strongly introverted type should not attempt it. Interest in people, in business or industry are desired, but develop easily in the research-social individual. The training requirements are definite. Executives do not ask for psychology or economics or mathematics. They ask for methods of dealing with people, for business judgment, for ability to present data by means of charts, condensed tables, and formulae. Scientific procedure is appreciatively recognized. Short courses in business psychology, psychology of selling, advertising, journalism, and the like, designed largely to attract students, form an exceedingly minor part of the preparation needed. Scientifically trained psychologists, men and women who know their laboratory thoroughly, succeed when they get the vision.

The Measurement of Interests in Vocational Selection

By Max Freyd, *University of Pennsylvania*

Those who read Professor Yoakum's article on Basic Experiments in Vocational Guidance, in the first number of the Journal of Personnel Research, *will remember his calling attention to the need for developing instruments for the measurement of individual mental attributes other than the intelligence factor. Among such factors, one that has come up for a good deal of discussion and for some research is the matter of interests and their relationship to vocational selection. The present paper by Mr. Freyd contains the description of an attempt to measure interests, undertaken while he was at Carnegie Institute of Technology, a partial account of which appeared in the September issue of the Journal of Applied Psychology.*

IN A recent number of the *Journal of Applied Psychology*[1] the writer presented a method for the study of interests with reference to vocational guidance and selection. No striking novelties in technique or results were presented in that article, but attention was called to a simple, convenient, and statistically correct method of studying interests, which had produced valuable results in the personnel studies being carried out at Carnegie Institute of Technology.

It is not necessary to review the arguments for the consideration of interests in vocational guidance and selection, for even if some theoretical objection presented itself, which is inconceivable, the pragmatic justification for the study of interests would not be weakened. If an interest questionnaire, treated with the proper statistical methods, and evaluated with reference to its capacity for discriminating between those who succeed and those who fail in a given industrial task, can be scored in such a way as to make this discrimination numerical and employable in guidance, no theoretical considerations need disturb the psychologist. By the same token, any test which is a successful divisor of the sheep from the goats, need not be analyzed with regard to the specific capacities which it measures, except insofar as the curiosity of the experimenter so dictates. Suffice it to say

[1] "A Method for the Study of Vocational Interests." *Journal of Applied Psychology*, September, 1922.

that it measures one or more components of the complex of abilities required to succeed in the given vocation.

The only liberty taken in this direction in the use of the blanks described in the above-mentioned article is the bestowal of the term "interests" on the elements which the answers to the questionnaires reveal. It is immaterial whether they be called interests, complexes, preferences, or likes and dislikes; what matters is that the psychological phenomena be given the recognition they merit. The writer has chosen the word "interests" as the most convenient and appropriate term to apply to them. The phenomena may be exemplified by reference to the salesman who makes a failure and who indicates on his questionnaire that he has a favorable attitude toward such occupations as forest ranger, lighthouse tender, bookkeeper, etc., and dislikes interviews, arguing, crowds, etc.

The blanks referred to in the above-mentioned article were called "Choice of Occupations" and "Likes and Dislikes." These blanks are given in full in the following pages. Each consists of a list of items,—occupations in the one case; personal characteristics, amusements, hobbies, etc., in the other case. Each item was followed by several characters, as L!, L, ?, D, D!—L representing "like," and D representing "dislike." The subject of the experiment expresses his attitude toward each item by crossing out one of these characters after the item, according to the directions placed at the head of the questionnaire. Such an arrangement makes for compactness, quickness of administration, ease of scoring, and enables the experimenter readily to lengthen or shorten his lists of items.

The statistical method of handling the data yielded by these blanks is also explained. It consists briefly in the comparison, item by item, of the answers of a group of successes with a group of failures in the same vocation. Note is taken of all differences which are great enough to pass a given statistical criterion. All items which do not show significant differences are ignored. Any person's questionnaire is scored with reference to the manner in which he checks the letters after the significant items, this score indicating the tendency of the person's interests to identify themselves with those of either the successes in the given occupation or the failures.

It was previously remarked that these questionnaires are being used in the personnel studies carried out at Carnegie Institute of Technology. The application of these blanks to selection problems necessitates the experimental determination of the scoring method for each vocation studied. *A priori* judgments on the items which will be found significant are in most cases borne out, but of course the experimental procedure is the only one relied upon in discovering the proper items. In most cases where the blanks have been used, they have proved to be of more value for purposes of vocational selection than any single test.

These blanks were used in an experiment conducted by the writer on the determination of the correlative differences in personality between those

who are primarily and basically inclined toward society and social occupations and who have ability in handling or motivating people, and those who are predominantly inclined toward material objects and machines, rather than persons. The differences obtained by these and other forms are set forth in another place by the writer.[2] The differences displayed by these two types or groups of people are interesting theoretically, but in the present connection the differences in their answers to the two questionnaires are especially noteworthy inasmuch as these differences are translatable into scores, just as if one group were called successes and the other failures. By scoring the interest blanks of any applicant for guidance we are placed in possession of a valuable means for advising him, since we may recommend to him the type of occupation in which his interests would find the most ready expression. In other words, we may tell him whether his interests would enable him to derive the greater satisfaction from work involving social contacts, or work requiring the manipulation of materials (social contacts being a secondary consideration).

The two groups of subjects representing in the experiment the socially and the mechanically inclined people, were chosen from among students at Carnegie Institute of Technology. The mechanically inclined group consisted of the thirty seniors in Industries (class of 1922), whose results were compared with those of students of engineering in the preceding article on the interest blanks. These men were studying mechanical operations with a view to filling positions where their technical information and ability would be of paramount importance, and nothing brought out through contact with them failed to justify the conclusion that their interests were predominantly mechanical. The socially inclined group consisted of twenty-nine men enrolled in the course in Life Insurance Salesmanship (Fall class, 1921–22) at Carnegie Institute of Technology. This course lasts twelve weeks, and draws men with sales interests from a wide territory. The men studied were those who, out of the total enrollment in the course, were the most likely to succeed according to the predictive criteria available at the time.[3] The abstract nature of the commodity they sold obviated all possibility of a mechanical interest, and the nature of their work necessitated the search for personal contacts. The successful motivation of others, depending largely on personality, was a prerequisite to their vocational accomplishment.

Table 1 gives the items which were included in the scoring method for the differentiation of these two groups. All items were given the same weight: 1. They were scored +1 if the given symbol after the given item (in the table) was checked more frequently by salesmen than by Industries seniors; where the differences were in the other direction, the item was scored —1. This is purely arbi-

[2] Unpublished thesis, Carnegie Institute of Technology, 1922.

[3] Unpublished doctor's thesis of M. J. Ream, Carnegie Institute of Technology, 1921.

TABLE 1

Items which entered into the scoring method for differentiating the socially inclined from the mechanically inclined on the basis of their interests

ITEM	SYMBOL	PER CENT OF EACH GROUP CHECKING THE SYMBOL		WEIGHT
		Social grant	Mechanical grant	
Occupational choices:				
Actor	L	46	20	+1
Astronomer	L	13	36	−1
Auto repairman	L	10	46	−1
Draftsman	L	10	43	−1
Factory manager	L	40	90	−1
Factory manager	D	33	03	+1
Locomotive engineer	L	20	43	−1
Machinist	L	10	50	−1
Machinist	D	63	26	+1
Magazine writer	L	53	23	+1
Magazine writer	D	20	50	−1
Preacher	L	23	03	+1
Ship officer	L	10	60	−1
Ship officer	D	56	20	+1
Shop foreman	L	03	56	−1
Shop foreman	D	73	16	+1
Specialty salesman	L	56	20	+1
Toolmaker	L	03	50	−1
Toolmaker	D	70	26	+1
Watchmaker	L	03	23	−1
Likes and dislikes:				
Fat men	L	53	17	+1
Fat men	D	00	30	−1
Very polite people	L	47	90	−1
Very polite people	?	33	00	+1
Conventions	D	07	27	−1
"Life"	L	97	77	+1
"Life"	?	00	23	−1
"New Republic"	L	33	77	−1
"New Republic"	?	63	23	+1
Interviews	L	77	33	+1
Interviews	? or D	23	67	−1

trary and does not imply any superiority on the part of the salesmen. The distinction between L! and L and between D and D! was ignored. Each person's score on the two blanks combined was the algebraical sum of the scores assigned to the items in the accompanying table.

Figure 1 shows the distribution of total scores on these blanks for the members of the two groups. The discrimination is almost complete. If the critical score is set between +2 and +3, there is an overlapping of just 3 cases out of the 59.

Several hundred other men who were capable of being classed as socially or mechanically inclined completed these two questionnaires and were assigned scores according to table 1. The distributions of their scores, combined with those given in figure 1, are shown in figures 2 and 3. The mechanically inclined group included the Industries seniors whose results are given in figure 1, plus 15 Industries seniors of the preceding year, and 80 seniors in engineering, mainly mechanical engineering. The socially inclined group included the life insurance salesmen whose results are given in figure 1, plus 152 other life insurance salesmen, 16 real estate salesmen, 70 adding machine salesmen, and 21 bond salesmen. The significance of the group differences are considerably reduced over figure 1. The median of an unselected group, would probably be + 2. It is not contended that an unselected group, scored in this manner, would show a bimodal distribution, and thus argue for two types of personality.

The value of the scoring method lies merely in its ability to denote which of two extremes represents the direction of an individual's leanings.

What are the conclusions to be drawn from such data? The data here presented, the scoring method outlined, may be used as it is for vocational guidance or selection within its natural limitations. More experimentation along the same line is called for, in order that the scoring method may be improved upon, in order that other more important oppositions of personality may be measured, and in order that a scoring method for the blanks for a number of vocations may be used to supplement tests for those vocations. It is entirely possible that other constellations of related interests may be discovered which are vocationally as important or more so than mechanical or social inclination. Inclination toward conceptual affairs immediately suggests itself, in accordance with Thorndike's three-fold classification of intelligences; although it is the opinion of the writer that conceptual intelligence or interest displays itself in both mechanical and social inclinations. The successful use of concepts, or intellectual activity in general, must find expression in and have reference to classes of overt behavior.

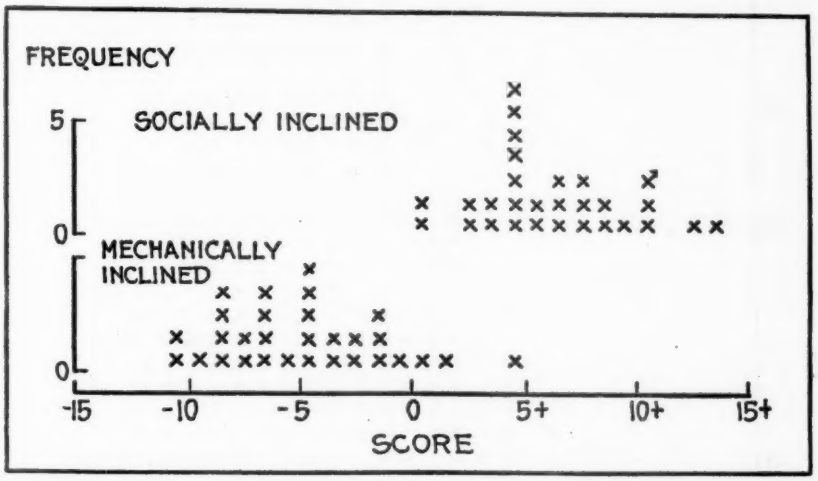

FIG. 1. DISTRIBUTIONS OF INTEREST ANALYSIS SCORES OF A GROUP OF 30 MECHANICALLY INCLINED MEN AND 29 SOCIALLY INCLINED MEN

The scoring method was derived empirically for the differentiation of these two groups

The division of people into those who are mechanically inclined and those who are socially inclined postulates in these groups practically equal amounts of cortical activity,—the division being on the basis of overt behavior and recognizable constellations of interests. In this connection it is not the intention of the writer to hold a brief for the existence of types. Most people incline decidedly toward neither mechanics or society, but they partake to different degrees of

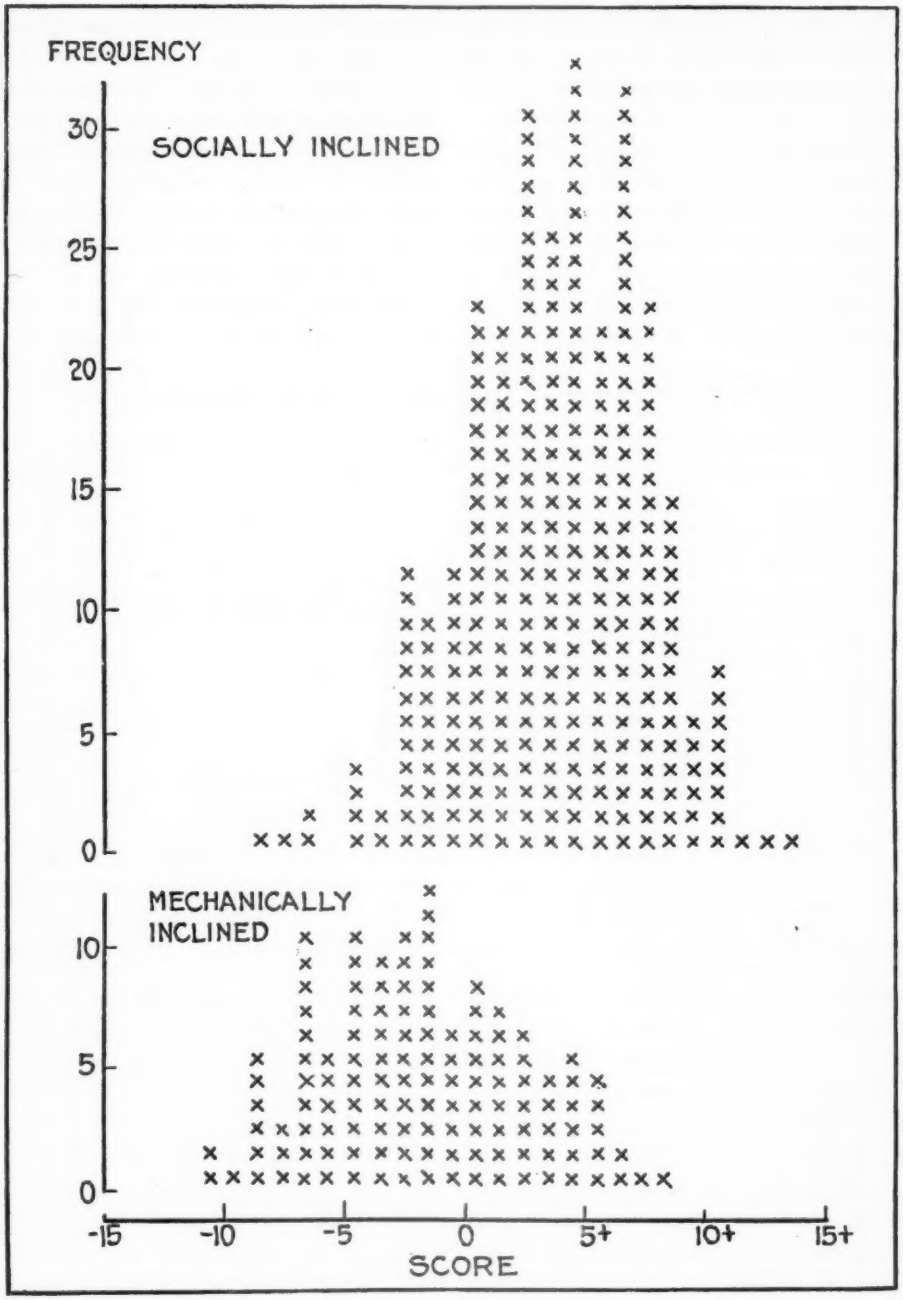

FIG. 2. DISTRIBUTIONS OF INTEREST ANALYSIS SCORES OF A GROUP OF 125 MECHANICALLY INCLINED MEN AND 288 SOCIALLY INCLINED MEN

These groups include those in figure 1. The scoring method is the same as in figure 1

leanings toward one or the other extreme, unless they belong to that minority in which the two tendencies are exactly equal in strength.

This method for the study of interests will probably find its most practical employment in connection with studies in vocational selection. The determination of the interests which find expression in a given occupation, which are responsible for the worker's stability and satisfaction in that occupation, takes equal rank with the analysis and testing of the abilities called for in the given occupation. In a sense it is of superior rank, for if it be granted that interests are correlated with abilities, the blanks may be considered indirect measures of the abilities required in the occupation as well as measures of those correlative interests which make for stability and satisfaction.

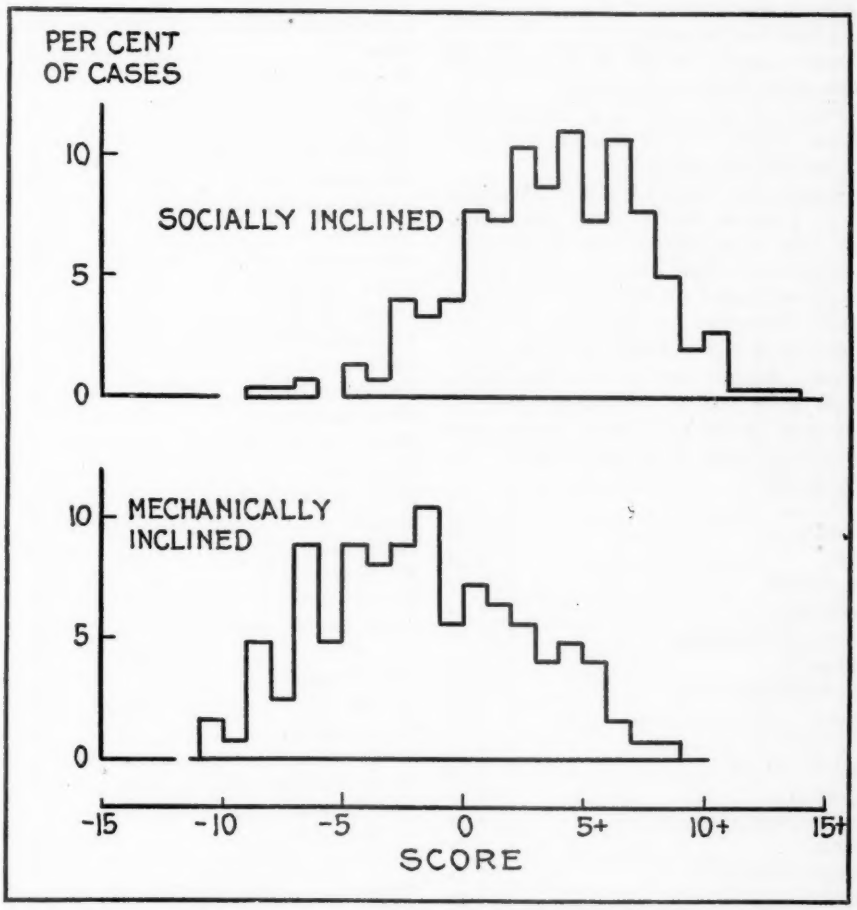

FIG. 3. PERCENTAGE DISTRIBUTIONS OF INTEREST ANALYSIS SCORES
Same cases as in figure 2

QUESTIONNAIRES

CHOICE OF OCCUPATIONS

After each of the occupations listed there are three symbols. Draw a circle around one of the symbols after each occupation, as follows:

Draw a circle around L if you would like doing that kind of work.

Draw a circle around D if you would dislike doing that kind of work.

Draw a circle around ? if you have no decided feelings toward that kind of work or know nothing about it.

Disregard any salary or social differences or any possible family objections. Consider only your interest and satisfaction in doing each of the kinds of work listed. You are not asked whether you would take up the occupation permanently; you are merely asked if you would enjoy that kind of work. Assume that you have the ability necessary for each of the occupations.

Be sure to draw a circle around one symbol after each of the occupations. Do not skip any.

Actor ..... L ? D
Architect ..... L ? D
Artist ..... L ? D
Astronomer ..... L ? D
Auctioneer ..... L ? D
Automobile salesman ..... L ? D
Auto racer ..... L ? D
Auto repairman ..... L ? D
Aviator ..... L ? D
Bank teller ..... L ? D
Baseball player ..... L ? D
Carpenter ..... L ? D
Certified public accountant ..... L ? D
Chemist ..... L ? D
College professor ..... L ? D
Consul ..... L ? D
Cook ..... L ? D
Dentist ..... L ? D
Draftsman ..... L ? D
Editor ..... L ? D
Explorer ..... L ? D
Factory manager ..... L ? D
Farmer ..... L ? D
Fisherman ..... L ? D
Forest ranger ..... L ? D
Foreign correspondent ..... L ? D
Hotelkeeper or manager ..... L ? D
Judge ..... L ? D
Labor arbitrator ..... L ? D
Lawyer ..... L ? D
Librarian ..... L ? D
Lighthouse tender ..... L ? D
Locomotive engineer ..... L ? D
Machinist ..... L ? D
Magazine writer ..... L ? D
Mayor ..... L ? D
Mechanical engineer ..... L ? D
Member of Congress ..... L ? D
Musician ..... L ? D
Newspaper reporter ..... L ? D
Novelist ..... L ? D
Office clerk ..... L ? D
Office manager ..... L ? D
Orchestra conductor ..... L ? D
Philanthropist ..... L ? D
Poet ..... L ? D
Politician ..... L ? D
Preacher ..... L ? D
Private secretary ..... L ? D
Promoter ..... L ? D
Railway conductor ..... L ? D
Rancher ..... L ? D
Real estate salesman ..... L ? D
Retail merchant ..... L ? D
Retail salesman ..... L ? D
Secret service man ..... L ? D
Ship officer ..... L ? D
Shop foreman ..... L – D
Singer ..... L ? D
Social worker ..... L ? D
Soldier ..... L ? D
Specialty salesman ..... L ? D
Steeple-jack ..... L ? D
Stock broker ..... L ? D
Street car conductor ..... L ? D
Surgeon ..... L ? D
Tailor ..... L ? D
Teacher ..... L ? D
Toolmaker ..... L ? D
Traveling salesman ..... L ? D
Typist ..... L ? D
Watchmaker ..... L ? D

LIKES AND DISLIKES

Draw a circle around one of the symbols after each of the items below, as follows:

Draw a circle around L! if you like the item very much.

Draw a circle around L if you like the item.

Draw a circle around ? if you have no decided feelings toward the item.

Draw a circle around D if you dislike the item.

Draw a circle around D! if you dislike the item very much.

You may be in doubt in some cases. Use your own judgment, always encircling the symbols in the way which expresses your *most frequent attitude*.

Be sure to draw a circle around one symbol after each of the items. Do not skip any.

Fat men..... L! L ? D D!
Fat women..... L! L ? D D!
Thin men..... L! L ? D D!
Thin women..... L! L ? D D!
Tall men..... L! L ? D D!
Tall women..... L! L ? D D!
Short men..... L! L ? D D!
Short women..... L! L ? D D!
Blondes..... L! L ? D D!
Brunettes..... L! L ? D D!
Very old people..... L! L ? D D!
Children..... L! L ? D D!
Cripples..... L! L ? D D!
Side show freaks..... L! L ? D D!
People with gold teeth ..... L! L ? D D!
People with receding foreheads..... L! L ? D D!
People with protruding jaws. L! L ? D D!
Chinless people..... L! L ? D D!
People with hooked noses... L! L ? D D!
Cross-eyed people..... L! L ? D D!
Blind people..... L! L ? D D!
Deaf mutes..... L! L ? D D!
Feeble people..... L! L ? D D!
People whose eyes are set close together..... L! L ? D D!
Men who wear beards..... L! L ? D D!
Bow-legged people..... L! L ? D D!
Self-conscious people..... L! L ? D D!
People who are slow in making decisions..... L! L ? D D!
Very polite people..... L! L ? D D!
Progressive people..... L! L ? D D!
Conservative people..... L! L ? D D!
Energetic people..... L! L ? D D!
Absent-minded people..... L! L ? D D!
People who disagree with you L! L ? D D!
People more intelligent than you..... L! L ? D D!
People less intelligent than you..... L! L ? D D!
People who borrow things.... L! L ? D D!
Quick-tempered people..... L! L ? D D!
Optimists..... L! L ? D D!
Pessimists..... L! L ? D D!
People who forgive very quickly..... L! L ? D D!
Grudge-holders..... L! L ? D D!
People who tend to assume leadership..... L! L ? D D!
People who are easily led..... L! L ? D D!
Jealous people..... L! L ? D D!
Conceited people..... L! L ? D D!
People who have made fortunes in business..... L! L ? D D!
Forgetful people..... L! L ? D D!
Emotional people..... L! L ? D D!
Thrifty people..... L! L ? D D!
Spendthrifts..... L! L ? D D!
Stingy people..... L! L ? D D!
Talkative people..... L! L ? D D!
Religious people..... L! L ? D D!
Irreligious people..... L! L ? D D!
People who have done you favors..... L! L ? D D!
People for whom you have done favors..... L! L ? D D!
People who get rattled easily L! L ? D D!
Witty people..... L! L ? D D!
Educated people..... L! L ? D D!
Immoral people..... L! L ? D D!
Cautious people..... L! L ? D D!
Sick people..... L! L ? D D!
People who have no sense of humor..... L! L ? D D!
Nervous people..... L! L ? D D!
People who always agree with you..... L! L ? D D!
People who talk very loud... L! L ? D D!
People who talk very low .... L! L ? D D!
People who talk very fast.... L! L ? D D!
People who talk very slow ... L! L ? D D!
People who usually talk about themselves..... L! L ? D D!
Methodical people..... L! L ? D D!
Fashionably dressed people . L! L ? D D!
Carelessly dressed people ... L! L ? D D!
Southerners..... L! L ? D D!
New Englanders..... L! L ? D D!

Westerners..... L! L ? D D!
Golf..... L! L ? D D!
Fishing..... L! L ? D D!
Professional baseball..... L! L ? D D!
Tennis..... L! L ? D D!
Swimming..... L! L ? D D!
Football..... L! L ? D D!
Driving an automobile..... L! L ? D D!
Taking long walks..... L! L ? D D!
Checkers..... L! L ? D D!
Poker..... L! L ? D D!
Solitaire..... L! L ? D D!
Billiards..... L! L ? D D!
Dancing..... L! L ? D D!
Summer resorts..... L! L ? D D!
Amusement parks..... L! L ? D D!
Picnics..... L! L ? D D!
Excursions..... L! L ? D D!
Smokers..... L! L ? D D!
Conventions..... L! L ? D D!
Sporting pages..... L! L ? D D!
Love stories..... L! L ? D D!
Detective stories..... L! L ? D D!
"Life"..... L! L ? D D!
"Literary Digest"..... L! L ? D D!
"New Republic"..... L! L ? D D!
"System"..... L! L ? D D!
"National Geographic Magazine"..... L! L ? D D!
"American Magazine"..... L! L ? D D!
"Popular Mechanics"..... L! L ? D D!
Charlie Chaplin..... L! L ? D D!
Mary Pickford..... L! L ? D D!
Wm. S. Hart..... L! L ? D D!
Cowboy movies..... L! L ? D D!
Educational movies..... L! L ? D D!
Travel movies..... L! L ? D D!
Vaudeville..... L! L ? D D!
Musical comedy..... L! L ? D D!
Listening to a story..... L! L ? D D!
Telling a story..... L! L ? D D!
Being the butt of a joke..... L! L ? D D!
Arguing..... L! L ? D D!
Interviews..... L! L ? D D!
Making a speech before a crowd..... L! L ? D D!
Opening a conversation with a stranger..... L! L ? D D!
Being left to yourself..... L! L ? D D!
Teaching..... L! L ? D D!
Organizing a play..... L! L ? D D!
Living in the city..... L! L ? D D!
Living in the country..... L! L ? D D!

News Notes

SPECIAL NUMBER OF JOURNAL OF PERSONNEL RESEARCH

The next number of the JOURNAL OF PERSONNEL RESEARCH will be in the form of a special issue dealing particularly with the matter of ratings and rating methods. It will include the following papers: Donald G. Paterson will describe the development of the graphic rating system as carried out in the Scott Company Laboratory; Miss M. A. Bills has an article on rating the efficiency of clerical workers; Forrest A. Kingsbury on Analyzing Ratings and Training Raters.

THE NATIONAL PERSONNEL ASSOCIATION

The first annual meeting of the new National Personnel Association was held in Pittsburgh at the William Penn Hotel, November 8, 9 and 10. It is perhaps well known now among readers of the JOURNAL that the old National Association of Corporation Training and the Industrial Relations Association of America are no longer operating. The Industrial Relations Association of America transferred its interests to the then forming Personnel Association early in 1922. The final dissolution meeting of the National Association of Corporation Training was held December 9 during the meetings of the National Personnel Association. It also transferred its functions to the new Association.

The meetings of the new Association and all local arrangements were in the charge of a large committee of representative Pittsburgh firms. Members of the new Association and friends attending commented on the excellence of the arrangements and on the unusual promptness with which the general programs and various section meetings were carried on. Special comment was made with respect to the arrangements for the banquet held on Thursday evening, and on the informal entertainment arrangements under the direction of Mr. McClelland of the Westinghouse Electric & Manufacturing Company on Wednesday evening. The chairman of the General Committee on Arrangements was Mr. H. F. Bucher of the Philadelphia Company.

The attendance at the meetings was not as large as has been usual at either of the original organizations now merged in one. It was not expected by those in charge of the program and of the meetings that there would be in attendance any large number of representatives from firms interested in various fields. The newness of the Association and the need for careful development of plans led them, however, to hope for representatives who were deeply interested in the future of personnel work. The character of the attendance and the interest manifested in the first program and in the future plans of the organization justified the belief of the leaders in this respect. The vice-president of a New York company said that in one meeting he counted twenty-five presidents amd major executives of as many different firms in attendance. Scattered throughout the various sections, one could always find major officers of different companies taking part in discussions and leading in the development of further plans for study and research.

A great deal of work necessarily had to be done by the representatives present in planning the organization of the new Association and in preparing carefully for its future program of investigation and service to the companies. It is not possible to give here the names of representatives attending the Convention, nor to indicate how thoroughly the plans were laid for the future. Everyone left the Convention, however, with the feeling that a long step

had been taken in personnel and that the new organization ought to have a long career of usefulness ahead of it.

A paper by Mr. W. W. Kincaid, President of The Spirella Company, on personnel functions and the work of such an organization as this, abounded in suggestions for the new organization. Mr. Kincaid, as President of the old National Association of Corporation Training, acted as the principal executive officer for the new Association.

Over 300 persons attended the banquet on Thursday evening. Addresses were made by Mr. E. K. Hall, Vice-President in Charge of Personnel of the American Telephone & Telegraph Company, and by Professor Michael Pupin of Columbia University. Mr. Marcus Rauh, President of the Pittsburgh Chamber of Commerce, presided. The address of Mr. Hall was unusually well received. His topic was "Management's Responsibility For and Opportunities in the Personnel Job." He maintained that the major portion of the work of the Personnel Department was advisory in nature and that the executives in personnel belong to the advisory staff. It belonged to management to see that the personnel principles were carried out in the plants and he emphasized the need for coöperative effort and the use of suggestions from the persons immediately concerned, regarding rules covering such things as safety, working conditions and benefit associations. All persons directly concerned should, as far as possible, develop the reasons for any rules made and should see to the observance of such rules. These two principles—that the personnel representatives should be on the advisory staff, and that the making and observance of requirements should originate among those most directly concerned—are, according to Mr. Hall, fundamental to the best personnel work.

The preliminary report of the Section on Job Analysis divided the subject into two parts, corresponding roughly to the theory and practice of job analysis. The first part discusses the method and some of the problems to which job analysis may be directed. It also includes a short statement of qualifications of a job analyst. The second part gives four carefully prepared descriptions of specific applications of the results of job analysis to such things as foremanship training, standardizing salaries, developing lines of promotion, and reducing operating expense. We quote below one or two paragraphs from the report.

"In its report for 1920, this Committee defined Job Analysis as that process which results in establishing the component elements of a job and ascertaining the human qualifications necessary for its successful performance.' The Committee still adheres to that definition and believes that an understanding of its import is essential to any discussion of the subject.

Scope of Job Analysis

"It should be understood, however, that this definition is general and that the extent of work to be accomplished in undertaking job analysis is governed by individual needs and circumstances. Just as an analysis of a substance may be undertaken to determine its physical characteristics, its chemical composition, its bacteriological content, etc., so the scope of job analysis is limited by the purpose which it is to serve and the conditions surrounding its undertaking. Sometimes the conditions may impose very arbitrary boundaries and necessitate conservation of method; at others they may permit the widest possible extent and freedom of action. Such variations are dependent upon the spirit and structure of the organization and recognition of the importance of taking these factors into account is essential to the securing of worth while results.

Enlisting the Coöperation of the Staff

"Whoever is entrusted with the work of job analysis and no matter by what department it is carried on, the first step must be to secure the friendly attitude and cooperation of all department heads and, indeed, of all workers. Scrupulous care should be taken to avoid antagonizing anyone and to prevent arousing the sus-

picion that the work is being undertaken in a critical attitude or that it will result in radical changes which may involve a decrease either in the working force or in salaries. Provision should be made for bringing the views of both employees and department heads concerning their work to the attention of the job analyst and, if possible, no conclusions should be reached which do not have the approval of department heads. Only in this manner will the job analyst be able to secure correct information and to continue his work without disturbing the morale of the staff and to that extent interfering with production."

The Industrial and Public School Relations Committee, though a general committee of the Association, has performed a great many of the duties of the Committee through the local chapter in Pittsburgh. One of the recommendations of the National Committee calls for publication of the special report covering work done by the Pittsburgh chapter. The work of this local chapter has been under the general direction of Mr. C. S. Coler, Director of Education of the Westinghouse Electric and Manufacturing Company. The general report of the Committee covers a statement of principles, a summary of agencies interested in the problem, and three sets of criticisms: (1) criticisms of industry, (2) criticisms of the schools, and (3) criticisms of the home. These criticisms are followed by an interesting summary of suggestions for increasing the coöperation between public schools and industries. The discussion at the meetings emphasized the very great importance of the work of this committee and the awakening interest of all classes in the better preparation of our youth for specific types of work and for performing specific duties.

The following committees made preliminary reports which were in the hands of all members of the Association and were discussed at the appropriate sectional meetings:

Relations with Engineering Colleges—Chairman, W. E. Wickenden, Assistant Vice-President, American Telephone and Telegraph Company.

Employees' Publications—Chairman, F. P. Pitzer, Superintendent of Service Division, Equitable Life Assurance Society of the United States.

Foreman Training—Chairman, Harry H. Tukey, Educational Director, New York Employing Printers Association.

Visualized Training—Chairman, H. M. Jefferson, Manager, Personnel Department, Federal Reserve Bank of New York.

Executive Training.

Shop Training—Chairman, R. L. Sackett, Dean of Engineering, Pennsylvania State College.

Health Education—Chairman, Dr. E. S. McSweeny, Medical Director, New York Telephone Company.

Economics for Employees—Chairman, Lee Galloway, Vice-President, The Ronald Press Company.

Trade Apprenticeship—Chairman, E. E. Sheldon, Supervisor of Training, R. R. Donnelley & Sons Company.

Psychological Tests and Rating Scales—Chairman, Dr. E. K. Strong, Jr., Director, Bureau of Educational Research, Carnegie Institute of Technology.

Employment and Labor Turnover—Chairman, R. E. Von Kersburg, Employment Manager, R. H. Macy & Company

It was difficult to find any sectional meeting in which there was no interest taken. In fact, practically every sectional meeting at some point in its discussion aroused considerable difference of opinion and called for the many suggestions for the development of problems and the further work of the committees.

The plan of having committee reports published and sent to members preceding the Convention is undoubtedly an excellent one for the development of discussion. It is impossible to report in this notice of the meeting all of the points raised and the discussions that developed. We believe, however, that a careful perusal of committee reports and of the general report of the Convention will fully repay anyone interested in the numerous fields more or less closely related to personnel.

The Managing Director of the National Personnel Association is Dr. W. J. Donald, and the Association has its headquarters at 20 Vesey Street, New York. The office welcomes inquiries covering the functions of the National Association and also questions relative to specific problems related to personnel. It endeavors to act in as large measure as possible as a service organization for its membership. In addition to this, problems requiring careful research are being formulated and referred to committees for study and report.

CONFERENCE OF INDUSTRIAL PHYSICIANS AND SURGEONS. PENNSYLVANIA DEPARTMENT OF LABOR AND INDUSTRY

The Sixteenth Conference of Industrial Physicians and Surgeons which met in the Chamber of Commerce Building, Pittsburgh, Pennsylvania, on November 17, covered a wide range of topics at the morning session. Dr. F. S. Kellogg of the Western Union Telegraph Company dealt with the Problem of Industrial Tuberculosis and Dr. L. R. Thompson, of the United States Public Health Service read a paper on "Adequate Sickness Records of Lost Time in Industrial Establishments." "Factory Ventilation" was the title of a paper by Professor C. E. A. Winslow of Yale University in which he sketched the requirements for an adequate ventilating system as shown by research work in the field and stressed the importance of consulting a ventilating engineer, especially in factories where the industrial process emits an excess of heat or adds to the humidity. At the afternoon session, Dr. Frederick L. Van Sickle, Executive Secretary of the Medical Society of the State of Pennsylvania talked on "Revamping Medical Legislation in Pennsylvania," and Dr. R. R. Layers of the United States Bureau of Mines on "The Care of the Injured Miner."

From the point of view of those in the general field of personnel work, probably the most interesting contribution was Dr. Lightner Witmer's paper on "Psychological Tests that Aid in Determining the Industrial Efficiency of the Worker." Dr. Witmer pointed out that the progress of Industrial Psychology was being held back because industries were unwilling to pool information. Again the industries had not adequately analyzed and classified their jobs and were frequently asking psychologists to test for intelligence when the jobs required "efficiency," which he defined as the ability to reproduce the same performance under similar conditions, rather than "competency" which presupposes initiative and the ability to meet new situations.

BUREAU OF PUBLIC PERSONNEL ADMINISTRATION

The following extracts from a letter sent out in December to all the Civil Service Commissions in this country and Canada over the signature of Mr. Charles P. Messick, Chief Examiner and Secretary of the New Jersey State Civil Service Commission, President of the National Assembly of Civil Service Commissions, and a member of the Advisory Board of the Bureau of Public Personnel Administration, will be of particular interest to those interested in personnel work in the public service. It has to do with the new Bureau of Public Personnel Administration, announcement of the organization and purposes of which was carried in a news note in the July number of the JOURNAL OF PERSONNEL RESEARCH.

The National Assembly of Civil Service Commissions has been working for more than three years to bring about the establishment of a central organization which might serve the various commissions by acting as a clearing house of information, assisting in working out better and less expensive tests, and taking a prominent part in the simplifying and standardizing of civil service methods and practice. Such an organization is now ready to function. Financial support amounting to $25,000 a year for a period of three years is assured; the form of organization has been determined; the important staff selections have been made; an office has been secured; and the Bureau of Public Personnel Administration, as the new organization is to be called, is ready to serve your needs.

As to organization, the work of the Bureau of Public Personnel Administration is to be carried on under the direction of and in connection with the Institute for Government Research, located at 26 Jackson Place, Washington, D. C., and the offices of the Bureau are to be the Institute's quarters. There is to be an Advisory Board of five members, two selected by the National Assembly of Civil Service Commissions (Mr. William Gorham Rice of the New York State Commission and myself have been designated), one by the United States Civil Service Commission (Mr. George Wales, President of the United States Civil Service Commission, has been designated) one by the National Civil Service Reform League (the League has decided that its president, Mr. Richard H. Dana, will serve ex officio), and one by the National Research Council (the Council has designated Dr. Robert M. Yerkes).

As has been often stated by those interested in the creation of the Bureau, its success to a large extent must depend upon the ability, standing, and judgment of the staff, necessarily small, selected to do the work. The Advisory Board and the Institute for Government Research concur in the belief that for the present at least there should be two principal members, one thoroughly familiar with the field of psychological development as applied to the selecting of personnel and one with wide experience in modern civil service administration. Two men, certainly among the best fitted in the country for these particular places, have been secured—Dr. L. L. Thurstone, head of the department of education and applied psychology in the Carnegie Institute of Technology at Pittsburgh, and Fred Telford, who has been engaged in civil service work in various capacities for ten years.

Dr. Thurstone has had wide experience in connection with the application of psychology to the problems of personnel administration in the public service and in the industrial field; he has given psychological examinations to more than 100,000 college students and to more than 40,000 office, clerical, factory and other industrial workers. During the war he assisted in developing the army trade tests. Later he developed for civil service and industrial use a set of clerical tests to determine the ability and skill of applicants for clerical positions. Recently he made a study in Detroit of the qualification requirements of various classes of police officers and of tests which may be used to determine the extent to which applicant and officers possess these qualifications. His work at the Carnegie Institute of Technology has included extensive statistical researches. In a word, Dr. Thurstone brings to the Bureau wide knowledge of the principles of psychology and the methods of applying these principles in the testing and selection of personnel as well as aptitude and resourcefulness in grasping and solving personnel problems involving research.

Mr. Telford obtained his first civil service experience as Assistant Examiner for the Illinois State Civil Service Commission in 1913, 1914, and 1915. Since then he has been almost continuously engaged in civil service work in some form. He has had important parts in the classification and salary standardization work carried on by the United States and Canadian governments, the State of Maryland, and the cities of Montreal, Baltimore and Philadelphia. He had a principal part in launching the new civil service commissions in Montreal, Baltimore, and Maryland, his work including the designing of forms, the devising of filing and record keeping systems, the preparation of rules and office regulations, assistance in holding the early tests, and consulting service for some months after the new commissions were operating. He has also done considerable work of various kinds in the office of the civil service commissions of Canada and Philadelphia and his work has made him familiar with the laws, rules, and to a considerable extent the staff and operating procedure of most of the civil service commissions in the United States and Canada.

The program adopted by the Bureau of Public Personnel administration puts great emphasis on the development, in coöperation with civil service commissions, of improvements in examinations intended to

insure greater certainty in elminating the unfit and rating relatively the qualified, to reduce the time and expense involved in holding and rating tests, and, in a word, to determine the very best methods of testing applicants for places in the public service. In addition the Bureau will of course be ready upon request to give assistance in other civil service matters, including records, forms, rules, office system and procedure, classification, salary standardization, or the current practise of federal, state, county, park, or municipal commissions with regard to any civil service matter. The Bureau will itself very shortly distribute a statement of the services it is prepared to render.

INFORMATION ON PERSONNEL TO BE SUPPLIED BY RESEARCH INFORMATION SERVICE NATIONAL RESEARCH COUNCIL

Those actively interested in personnel administration and particularly in personnel research are already aware of the interest which National Research Council has taken in these matters. The Council was one of the responsible agencies in creating Personnel Research Federation, and Research Information Service of the Council is one of the voting members in the Federation. Research Information Service is showing its interest in a very real way in announcing its intention to furnish information and advice on matters pertaining to personnel. A recent communication from the Service says:

"Standardized tests and measurements are widely sought by engineers, but the hazards incident to the activities of charlatans prevent the full utilization of this contribution of modern science. Recognizing the importance of the movement and the need for careful scientific appraisal of available methods, the National Research Council has initiated various activities for the benefit of managers who are dealing with human problems. To this end the Research Information Service of the Council is giving attention to the compilation of reliable information about personnel matters.

"As a free clearing-house for the promotion of research and its applications to industry, the Research Information Service is prepared to furnish critical information about modern personnel methods. Among the mechanisms especially designed for this informational service, there is maintained a personnel file in which consulting psychologists, personnel specialists, and other reputable experts on problems of human adjustment are listed. Files of information about available tests and their particular usefulness are also maintained.

"With specialists on these problems in the Council offices and with files of information at their disposal, persons interested may profitably appeal to the Research Information Service for facts about methods of personnel classification. All communications should be addressed to: Research Information Service, National Research Council, Washington, D. C."

NATIONAL BUREAU OF ECONOMIC RESEARCH, INC.

The National Bureau of Economic Research, Inc., in its News Bulletin of November 1, gives a résumé of the Bureau's operation to date and its plans for the future.

The work of the Bureau began with an exhaustive investigation of the Amount and Distribution of the National income. The results of this study for the years 1909–1919 inclusive, have been published in three separate volumes. Work is now in progress on the National Income during 1920 and 1921 and it is the purpose of the Bureau to continue similar studies year by year.

At the request of President Harding the Bureau has completed, for the President's Conference on Unemployment, an investigation of Unemployment and Business Cycles. "The study shows that succeeding business cyles—each comprising a period of prosperity and depression—are in many ways similar but that in some respects they differ materially. Leading students of the subject believe that the forces which predominate in a period of

depression inevitably bring about an upturn in business and that the forces created by a period of prosperity just as inevitably bring about the resultant depression. Whether or not these forces can be controlled is a matter of vital importance."

"The report is divided into three parts—the general description of the Business Cycle, the known facts concerning the extent of unemployment, and the various proposals and attempts which have been made to meet the situation." This volume will be issued about January 1st and will form the basis of recommendation to be made by the President's Committee. It is also proposed to publish a separate volume on Employment, Hours of Work, and Earnings of Industrial, Agricultural and other Employees during the years 1920 to 1922.

The program of the Bureau for 1923 includes a continuation of its work on the National Income and an exhaustive investigation into the fundamental nature and history of business cycles, together with certain other shorter studies now under consideration, to be described in later issues of the bulletin.

In conclusion the bulletin states:

"In carrying out this program the Directors have reasonable assurances of the continued support of those who have already contributed largely to the Bureau's activities. Certain very necessary expansions of the Bureau's work, and its ultimate permanence will, however, depend upon the success of plans now being made for the establishment of an endowment fund, and for the building up of a broad list of contributing subscribers. Progress in these directions will be reported from time to time in issues of the News-Bulletin."

CHARACTER ANALYSIS

Systems of character analysis, their validity or their lack of it, the extent of their use and their influence on personnel practice continue to be topics of oral and written debate among personnel men. However, quantitative studies have removed some assumptions regarding these systems from the realm of debate. Studies on the validity of certain tenets of these systems appear in the present and recent numbers of the JOURNAL. A limited inquiry regarding the extent to which systems of character analysis are used in the business world has recently appeared. The inquiry was conducted by A. W. Kornhauser and A. W. Jackson of the University of Chicago and a note on their findings appeared in the September 1922 number of the Journal of Applied Psychology. The important sections of this note are reprinted below.

"Two hundred questionnaires were mailed, one hundred to employment managers of industrial plants employing over three hundred workers, and one hundred to insurance agency managers. The companies to which the questionnaire was sent were selected at random within these groups. All were in the city of Chicago. The principle questions on the blank were: 'Do you make use of a system of character analysis in sizing up men?' and 'What is the name of the system used?' (An introductory note explained what we meant by systems of character analysis.) Other questions sought to obtain the individual's opinion of these systems. The position, age, and schooling, of the men reporting were also secured.

"Sixty-five replies were received, twenty two from the insurance companies and forty-three from the industrial plants. Six of the replies reported the use of some system of character analysis. Four of these were from employment managers and two were from agency managers in insurance companies. Three of the six used the Blackford system, two used a combination of Blackford's with some other system; one did not specify the system used. Five of the six men reporting the use of character analysis systems are university graduates and the sixth is a high school graduate.

"Six in two hundred is probably a closer estimate of the use of character analysis within the groups investigated than is six in sixty-five, since persons using such methods would be much more likely to reply than

would those unacquainted with the systems mentioned in the questionnaire."

The inquiry is of some interest and probably fairly represents the situation in Chicago. It is however a designedly limited inquiry and it would be dangerous to assume that the results necessarily indicate what the situation may be in other cities. Owing to the fact that several of the exponents of character analysis have their headquarters in New York and have been especially active here the findings for this area might show considerable variation from those in Chicago. The Personnel Research Federation hopes to repeat the inquiry for New York. In the meantime those who have other quantitative evidence on the extent of the use of systems of character analysis are requested to communicate with the Federation.

PERSONNEL RESEARCH AGENCIES

The attention of personnel workers and others interested in the personnel field is called to Bulletin no. 299 of the United States Bureau of Labor Statistics on Personnel Research Agencies. This report was prepared by Dr. J. David Thompson as the result of a request made to the Bureau by a preliminary conference on industrial personnel research held in Washington, D. C., November 12, 1920, under the auspices of Engineering Foundation and National Research Council. It was as a result of this conference that Personnel Research Federation was oganized in March, 1921.

In preparing the report, Dr. Thompson stated that it was his object to provide a nucleus of information about agencies conducting research relating to personnel. He gathered the information

1. By personal interviews in New York City, Boston, Chicago, Cleveland, Pittsburgh, Philadelphia, and Washington:

2. By correspondence with agencies elsewhere in the United States not covered by these personal interviews.

3. By systematic examination of the files of journals dealing with personnel management, pscyhology, industrial hygiene and safety, and the publications of the agencies themselves, for the purpose of verifying the statements made by their officers, which were frequently found to be incomplete or inaccurate.

That the report might be useful to a variety of people and agencies the term "personnel research" was broadly construed to include:

1. Employment management and industrial relations (such as selection and placement of employees, job analyses and specifications, rating and grading, lines of promotion, labor turnover, absenteeism, wage and other incentives, joint control, etc).

2. Vocational psychology, including the development and standardization of intelligence and trade tests.

3. Training of managers, foremen, and workmen, either in schools and colleges, in the factory, or under schemes of coöperation between educational institutions and industrial establishments.

4. Working conditions in relation to output, including hours of labor, fatigue, lighting, ventilation, food.

5. Health hazards and occupational diseases.

6. Safety codes and appliances; also the special problems connected with the employment of women and young persons, foreign born workers and colored workers, the handicapped or disabled, and the mentally deficient or unstable.

Lists of personnel agencies classified according to their principal activities, lists of official agencies—federal, state and municipal, and lists of non-official agencies including associations, societies, foundations, research bureaus and institutions, universities and colleges are given.

The bulletin may be secured on application to the Commissioner of Labor Statistics, U. S. Department of Labor, Washington, D. C.

Book Reviews

JUDGING HUMAN CHARACTER

By H. L. Hollingworth. D. Appleton and Company, New York. 1922. xiii + 268

REVIEWED BY C. S. YOAKUM

Professor Hollingworth has undertaken to present in non-technical fashion the achievements that have been reported in judging human traits. It is primarily a summary of the developments in methods with altogether very little of substantial and solid progress to record. The limitation of the major portion of the discussion in the book to traits other than intelligence and the omission of detail in the discussion of points that are taken up are perhaps the main reasons for this seeming lack of material. The major portion of the work that has been done to date has concerned the development of measures of intelligence as that term is commonly understood. The omission, purposely, of all this great mass of material curtails the scope and bulk of such a volume. No attempt is made to indicate except in the most general way the nature of the applications of the results that are presented. This again reduces the volume of material available. Recorded results of the attempts that are being made in the field of personality studies are at present few, though the literature of personality studies, discussions, and theories is historically large.

It is noteworthy, perhaps, that practically no mention is made of the most profitable financially of all fields of character analysis and prediction, except to say that "It should no longer be necessary to recapitulate nor to expose the many quaint and bizarre results of the very earliest attempts to systematize the signs of character." The reviewer is possibly prejudiced, but he believes, nevertheless, when literally hundreds of thousands of dollars are spent each year for lectures and courses in character reading, when the financial returns are so profitable to these charlatans that government agents are sent out to get income tax returns from them, when certain ones are allowed to lecture in a building dedicated to the development of the most exact of the applied sciences in New York City (The Engineering Societies Building), when still others are subsidized to sell their unscientific material, that the author of this excellent book is obligated to account for these unfortunate facts as surely as for those he has so well discussed.

It is no criticism of the book to be reviewed here that so little can be done to impress upon the average mind the principles and methods of the exact sciences. But certainly had the educative work of the older sciences been done well, we ought not today to be forced to explain to such a large proportion of an interested public that this is scientific method and that is not.

Pschology has either not left much of an impress upon the pupils, or it has had too few, and science in general has not done much to produce in the minds of its students a sense of system and method, if the incidents above mentioned can happen with the apparent approval of the scientist even though he is in a different field. The popular mind or the average mind or probably more accurately still most minds, including scientists outside their own field,

are not concerned with critical estimates of ideas that interest them and actually seem to care less for the money and time they now have than they do for even the slenderest hope of a glimpse into the future. They are still willing to pay out money and time to have some inaccurate, unanalyzed statements made about their future possibilities and their present character traits.

Perhaps the quickest way to destroy the active life of unproved methods is to ignore them as Professor Hollingworth has done, perhaps not. So long as no one was able to disprove the efficacy of lightening rods, the sale of them proved to be a lucrative business. In certain fields the business end of the belief becomes rapidly unprofitable as the scientific demonstration of its uselessness is scattered abroad.

Judging human character is a fairly universal practice. Recording our judgments as we make them is just as universally not a practice. Making estimates of ourselves is also not a frequent practice. The requirements for getting into a new group, a new community, a new lodge, a new school, or a new job involve just such judgments. Professor Hollingworth has, as noted above, seen fit to disregard one form of the recorded estimates of character, the report of the "professional characteriologist."

He takes up the application blank or letter of application, the photograph, and the recommendation, for more detailed study after setting aside the "characterologist" without discussion and brief mention of "(1) the observations of the tender parent; (2) the candidate's statement of his own qualification; (3) and the impressionistic theory of a prejudiced and ignorant observer."

Professor Hollingworth is not concerned with the actual way in which these can be used in the office of the employment man. The emphasis of the book is on methods of determining the validity of these procedures, of improving their reliability, and of developing more measures of more human traits.

Letters of application are of little use the way they are usually handled in employment offices. Experimental evidence is given to show that we do not know ordinarily whether the best judge is interpreting these letters, that even if he is given this task his variability of judgment is so great that it is very little better than chance, and while a consensus is better than the results obtained by any judge ordinarily, this average in itself is not a stable thing and varies from time to time. Similar results are found to obtain in the judging of photographs and in the use of the personal interview. None of the three traditional methods is found to be at all satisfactory as used. The results of the experiments are used by the author, however, to indicate the reasons for the failure of these methods and to point out how they can be improved by more accurate procedure. Throughout the book there is continual emphasis on the need for more rigid scientific methods of application.

In the chapter which discusses recommendations and testimonials it is pointed out that certain traits are more susceptible of use in determining the status of an individual than are others. Certain traits are more objective and can be estimated better than those that are more personal and more dependent on the relation between two individuals. The social traits are brought out by one's attitude toward others and that attitude is largely determined by the attitude of others. It is thus quite hazardous to say that an individual is coöperative unless the circumstances and degree of coöperativeness of the other person are also indicated. Traits that belong to these two divisions and stand intermediate between them are named.

The rating scale is discussed in the light of the recent work that has been done on it. Our author's conclusions are that as such methods stand at present there is little value in them. What value they have is usually destroyed by the indifference of the raters and their disinclination to follow carefully the procedure. The graphic scale is suggested as less likely to cause objection and has the advantage of being a systematic report.

An interesting and instructive statement covering the nature of a test is given in chapter VIII. Illustrations of the various types of tests and their general significance are

given. The four principles of construction, standard task, homogeneous material, graded tasks, miscellaneous gradations, and response values should be examined closely by anyone thinking of making tests who is either equipped with or is without the preliminary scientific training. The next chapter discusses without adequate illustration the methods of testing for general competence and aptitude. In Chapter X the author points out that an earlier prediction that the method of making tests previously called the 'miniature' and the one called the 'analogy' have not, either of them, proved of value so far. The other two methods the method of the 'sample' and the 'empirical procedure' or 'correlation method' have been extended in their use and are proving of great value in developing tests for improvement and aptitude. The 'sample' method is that one in which a significant part of the whole of a process is reviewed. The now familiar trade test involves both of these features of the method of 'sample.'

Chapter XI illustrates the use of the method of correlation in developing the relation between carefully devised tests and the traits under scrutiny. The growth of experiments to discover tests that will act as differentials in the description of traits in persons who are good in one occupation and not in another and between groups engaged successfully in different occupations is described. Chapter XII takes up the development of tests for the investigation of temperament. And in the final chapter the methods of picturing the required traits in an occupation or the nature of the traits and their varying degrees of importance in the individual are described.

The details of the experiments as given in the book cannot be reviewed here. Anyone who is at all interested in keeping abreast of the work that is in progress in this interesting field will find a perusal of this book worth while. A chapter or so on the nature of the criteria available to investigators would have aided in making clear the difficulties in getting reliable objective standards to test tests and also indicated the great wealth of material awaiting evaluation by scientific methods in the fields of efficiency, analysis of the elements of jobs, job classification with respect to differential traits, and the relation of these last two. We are not wholly dependent on the subjective estimates of others for the independent criteria necessary to establish the significant nature of the test and its validity. It is of equal importance to discover how men differ in their ways of working, in the success they have on the job, in the traits they exhibit in action, and to reduce them to systematic form. The measure of a test in validity, in reliability and in significance is wholly dependent on the substantial nature of the criteria used.

Tests are being used in many places but it is surprising how few of these places in education or in industry are at all concerned with the criteria. We often find after a test has been carefully standardized and prepared that the final measures of its value are the judgment of the persons who hastily reads it over or who glances over the results and decides by inspection that it is of no use in measuring the value of his employees or classes because one or two discrepant instances are found.

Persons unfamiliar or only slightly familiar with this field will not find the book easy reading, although the author has taken pains to make it as simple as the material will allow. It is one more pioneer effort to bring us all to the realization that human nature is at least as complex as the weather, that other universal topic.

The reader looking for a detailed description of the methods of selection for any particular job or for a method by which he can analyze his own self will not be rewarded unless he also uses the references given in the back of the book. The reader who hopes to read of much progress in the fields discussed will also be disappointed. From the scientific standpoint much progress is reported but immeasurably more needs to be done before much light can be shed on the personality and character traits of individuals.

The book should arouse an interest in this group of problems on the part of workers in the practical side of the analysis of traits. Until we shall have men and

women who are actually doing the work of selecting and placement trained to understand the method of science in this field, we shall be forced to continue the slow pace that has characterized this subject for hundreds of years. The disappointment of not finding an easy method and a quick practical solution to selection and character analysis will drive some few to the shorter and easier methods mentioned earlier in this review. It is immeasurably easier to attach the name of a trait to a bump on the head or to hair color and with foreknowledge of the inaccuracy and suggestibility with which our victim will listen, describe an individual both to our own and his satisfaction; but the results are far less in permanent value and in usefulness than those described by Professor Hollingworth.

TRAINING FOR STORE SERVICE

By Lucile Eaves. The Gorham Press, Boston, 1920. pp. 143

REVIEWED BY NATALIE KNEELAND

This is a report of an investigation made by the Research Department of the "The Women's Educational and Industrial Union." It deals with the problems of employment and training of juveniles employed in Boston stores between fourteen and twenty-one years of age.

The report starts out by showing the increase in the number of juveniles entering store service, especially in the larger stores. An increase which has made the question of their training and employment a real problem.

In a brief sketch of store organization the opportunities for promotion are indicated and the educational qualifications of the employees discussed. In conclusion the general statement is made that: "It is evident that mercantile establishments have but few positions suitable for persons who have received a limited education. Yet a surprisingly small proportion of the young persons who entered the stores handicapped by a defective education made use of opportunities to obtain additional schooling."

Further qualifications are described in classifying the juveniles according to occupations. They fall into eight main groups: salespersons; clericals; care of stocks; bundlers; floor, errand, cash, teller; inspectors, examiners, checkers; cashiers; and delivery. Charts giving the sex distribution and educational attainments of these groups show a large majority of female over male employees, and a higher percentage of educational attainment in the selling, clerical and cashiering positions than in the others. The qualifications are brought out in excerpts from employers' reports on good and poor employees.

Another interesting problem investigated, is that of the shifting of store workers. The sources of information were the certificates obtained at time of employment, application schedules of candidates for store positions, pay roll records, and the number of people in sample groups found working at the last place to which they had been certificated. Only 4.7 per cent of the certificates of the nineteen to twenty-one year old group indicated more than one place of employment for each year. That is, positions of store workers tend to become more stable in late adolescence. Also there is a tendency in the retail selling group to shift from one store position to another rather than into non-selling businesses. The main reasons given for shifting are seasonal differences in the business of retail selling, failure to standardize conditions of employment for the young and lack of outlook or definite lines of promotion.

A résumé of training for retail selling follows, covering the training in elemen-

tary schools, continuation school courses, secondary school training in store service and training in the store. In discussing department store training three phases are touched on—training for the regular selling force, training for contingents or specials, and training for buyers.

The report concludes with an appendix containing statistical data on conditions of employment of juvenile store workers in Boston, and a selected bibliography for a store library.

This book is valuable as a pioneer step in scientific investigation of department store problems. It emphasizes the importance of the juvenile worker in mercantile establishments and points out the need for developing better methods of employment, promotion and training. For the person at all familiar with department store problems the chapter on store organization will probably seem trite and rather tedious. Also, the presentation of qualifications for service inadequate. Personal opinions, even of store executives, are rarely consistent, or accurate enough to be of much significant value in drawing up a training or employment program, and the opinions here quoted are not exceptions. This particular point, however, is the only noticeable weakness in an investigation which in other respects has been carried out with scientific care and thoroughness.

GRAPHICAL METHODS

By William C. Marshall. New York: McGraw-Hill. 1921

REVIEWED BY L. L. THURSTONE

Professor Marshall's book on "Graphical Methods" is in a sense intermediate between such books as those of Peddle and Lipka which treat the subject as a branch of mathematics, and Brinton's book which is only descriptive of graphical methods of presenting facts. There is nothing in Professor Marshall's book which one should not be able to read with a common school education, according to the author. Any one who had had experience in teaching graduate students in the social sciences will realize that the author's estimate of common school education is much too high. If, however, students of the social sciences would master at least a part of the fundamentals in such a volume as this, their thinking and their writing and the presentation of their results in quantitative form would be very much clearer. There are introductory chapters classifying graphical methods and describing the different kinds of cross section paper, log paper, trilinear paper, and polar coördinates. Considerable space is devoted to the description of different applications of the graphical methods. Although most of the applications refer to engineering matter, students of the social sciences will do well to study the methods for their own use. A chapter on empirical equations is a brief summary of the methods of determining constants. Students of employment and personnel will be more interested in the chapter describing the graphical representation of routing and organization. The most valuable sections of the text are probably the chapters on calculations including the alignment chart methods. The rectangular coordinate methods of calculation should be more generally studied by students of the social sciences who are dealing with quantitative data because of the saving in time and effort accomplished by these methods. Particularly valuable for some classes of work is a rather complete list of sketches of alignment charts that are suitable for the solution of a wide range of different formulae. To this list is added references to articles describing the alignment charts for different types of formulae. To consult this chapter would perhaps make it unnecessary to design an alignment chart for any given formula if the formula can be found in this chapter. The test concludes with a descriptive chapter on the mechanical methods of making graphical records such as indicator diagrams, continuous temperature diagrams, and the like.

EYE CONSERVATION IN INDUSTRY

Bulletin I, published by the Eye Sight Conservation Council of America, Times Building, New York City, 1922

REVIEWED BY JOHN MCCLAIN

"The eye as a factor in the consideration of waste in industry is of prime importance entering directly into the subject of the efficiency of the individual. It is proper that special emphasis should have been placed upon eye defects as contributing greatly to fatigue and waste. Unnecessary fatigue, the waste of human energy and the waste of material resulting through defective vision and the loss of time from eye injuries through the lack of protection are potent factors in industrial waste which demand consideration viewed from the cold-blooded standpoint of economics, to say nothing of the humanitarian aspect."

Dr. Earle B. Fowler in his report on Eye Conservation, a chapter in Bulletin I, has divided the subject into three major considerations: (1) Hazards, (2) Vision, (3) Illumination.

Under the first topic it is shown that in Pennsylvania the compensation in eye accidents amounted to over $880,000 in 1920 and in the United States the eye is involved in 10.6 per cent of all permanent disability cases. Where protective measures were utilized, eye accidents have been reduced 75 to 85 per cent and several states have adopted protective codes. Under the National Code the processes or operations in which protection to the eyes is necessary are divided into nine groups as follows: (1) objects; (2) dust and particles; (3) dust and wind; (4) splashing metal; (5) gases, fumes and liquid; (6) excessive dust and small particles; (7) reflected light or glare; (8) radiant energy—moderate reduction required; (9) radiant energy—large reduction required.

Vision. It is common knowledge that at least 52 per cent of all employees have defective vision. It has been proven in a number of large industrial organizations, who have taken measures to meet the problem of defective vision, that the correction of sub-standard vision produces an increase in return that will pay for its cost.

Illumination. Even the most superficial survey of lighting conditions reveals that in the majority of plants there is much improvement possible. An investigation of the lighting conditions in 446 plants reveals the following information:

	per cent
Excellent	8.7
Good	32.0
Fair	29.1
Poor	18.8
Very poor	3.5
Pretty good, pretty poor	7.8

Codes prepared by state industrial commissions, the Illuminating Engineering Society, and by the manufacturers of lighting equipment are available. In general the requirements for efficient lighting are: (1) light enough to see by to do work—too little or too much produces discomfort; (2) diffusion to avoid sharp contrast and deep shadows; (3) elimination of glare.

The Eye Sight Conservation Council has spared no effort to coöperate through the director, Guy A. Henry, in any way possible with the many problems that have come up.

Abstracts

Personnel Work In America. LOUISE C. ODENCRANTZ. Personnel Administration, August, 1922.

Personnel work in American industry has developed out of the earlier welfare work. This work had included such things as lunchrooms, restrooms, medical and nursing services, recreational facilities, etc., and was started generally from philanthropic motives or to counteract union activities. Naturally the movement met with suspicion and disfavor on the part of workers, and this attitude has been a factor in the change from "welfare" to "personnel" work, though the evolution has not been as rapid as the change in terminology. The tendency today is for the community to take over many of the welfare activities formerly handled by the individual company. In some cases the labor unions have organized their own welfare organizations. Personnel departments are therefore turning away from welfare activities and giving more attention to the relations of the worker to the job. The direction of personnel activities in industrial plants is tending to become a major executive function in the hands of a vice president or personnel director with real authority. His functions include supervision of labor policies and standards of working conditions, shop committees, hiring and firing procedure, training, safety, health, etc. Through the close inter-relation between such functions and actual production, the tendency is for personnel workers more and more to get into the production end, or at least to work very closely with the production manager. The question now faces many personnel workers as to how far they should go in this direction. Better methods of selecting workers, including experiments with psychological and trade tests, proper training for the job—through job analysis, training of instructors, etc.,—and the working out of standards of production upon which to base pay rates, are some of the fields in which advances have been made. Training for personnel workers may be secured at various colleges and universities, particularly in the East and in special short courses conducted by private individuals. The tendency, however, is for firms to train their own personnel staff.

Proceedings of the Ninth Annual Meeting of the International Association of Public Employment Services. United States Department of Labor. Bureau of Labor Statistics. Bulletin No. 311. August 1922.

Some of the papers reported are of more particular interest for those engaged in Public Employment Service, others deal with facts or technique useful in the field of both public and private employment service. Of the latter, Mr. W. E. Bradwin's paper, based on long personal experience of the life of the Canadian bunk-houses as well as on more academic study of the subject, analyzes the problem of the migratory worker. Mr. Bradwin is Inspector of the Frontier College Branches, Toronto, Canada and he demands that the state should give opportunities for education to the bunk-house men for "unrest is rooted in their continued neglect."

Mr. G. Harry Dunderdale, Superintendent of the Boston Public Employment Office discusses "Effective Methods of Interviewing," describing a technique which is largely applicable to private as well as to public employment work.

Professor E. S. Deibler's paper on the "Measurement of Unemployment" shows the inadequacy of the figures collected in

the United States as a whole and cites attempts at more accurate measurement made by certain states and by the United States Employment Service and pays a tribute to methods employed in Canada. He shows the need of additional information for three purposes:—(1) to guide the activities of the employment service, (2) as an important factor in forecasting business trends, (3) as a basis for fixing a charge for the risk involved, should Unemployment Insurance be adopted.

The contribution of Vocational Guidance to the Prevention of Unemployment is the title of a paper by Miss Helen T. Woolley, President of the National Vocational Guidance Association. Miss Woolley points out that vocational guidance can make two small contributions to the prevention of unemployment by helping to reduce the number of unemployables in society and by helping the handicapped to find vocations. More fundamentally, if vocational guidance is conceived to mean education from the point of view of enabling each individual to develop the best type of productive capacity of which he is capable, and to acquire a real point of view about the occupational world, it has scope to develop the newer ideal of industry as an instrument of human welfare. In this it would make the most important contribution to the prevention of unemployment, because as soon as society at large feels keenly enough the obligation of doing it, it will find means to tackle the problem.

Some Human Wastes of Industry. HERBERT HOOVER. The Survey, pp. 505, July 15, 1922.

A final effort should be made to bring all the states in line to abolish child labor. If that cannot be accomplished quickly, Hoover is in favor of an amendment to the federal constitution that will give the necessary power and authority to compel action in those states which are negligent of their responsibilities.

In discussion of the hours of labor there are three points of view to be considered, those of the engineer, the economist, and the social student. The engineer wishes to restrict the number of hours to that which will permit the best performance and efficiency in the tasks in the long view. The economist is interested in the maximum productivity as a means toward higher standards of living through producing commodities cheaply. The social student approaches the question from an equally vital point of view; family life, citizenship, and opportunity for recreation and intellectual improvement.

Industrial losses through unemployment and intermittent employment constitute a problem not solved by any formula. Seasonal unemployment can be mitigated by cooperation in industries, and the integrating of industries to intermesh with each other. A study of the business cycle is now being made in an attempt to find methods for insuring more continuous operation through ebbs and flows of demand. Even if the ebb and flow of demand for consumable goods is found to be uncontrollable, there is hope that we can direct certain branches of our construction and equipment, such as public works, the greater utilities, in such a fashion that we could provide the finances and then delay construction until periods of depression. This would clip the top from booms, and the depression from slumps, and plane out the depressions in unemployment.

Employment—A Problem in Coordination. G. FRANK BEER. International Labour Review, July 1922, Vol. IV, No. 1.

One of the results of production for the community and nation in place of the old production for the family is the increasing dependence of labor upon management. The complexity of present day employment lies not in the physical processes of production, but more in determining the forms which it will take, and finding a market for the products. According to the writer, the total supply of capital does not affect the volume of employment directly but an unwise distribution or application may make a great difference to the prosperity of a country or area, particularly in new countries where labor is fluid, and will move from place to place.

Fluctuation in market prices contributes directly to fluctuation in employment;

therefore any stabilization of prices is a contribution to the steadying of employment. But standardization of production must precede stabilization of prices. A steady demand is certain for goods of a fixed standard of quality.

Any regulation of the volume of production would tend to stabilize prices by preventing excessive fluctuations in the demand for raw materials.

A criticism which might be made of many of the plans to relieve the present labour situation is that they are related chiefly to the changing phases of unemployment rather than to the problems of production which are permanent. We are giving too much attention to "effects" and not sufficiently analyzing "causes." Employment will never be regularized if attention is confined to one or two of its constituent elements. The working forces which determine, maintain, and direct production, and which it is necessary to bring into alignment are: management, labor, capital and credit; transportation facilities; government policy. The writer suggests permanent advisory councils for the consideration of plans which embody from a national standpoint the right working relations between these forces.

It is fluctuation of control that makes necessary the creation of a medium through which adaptation and coordination may be continually advocated or exercised, for with changing conditions, the relative control of these forces will vary.

The Outstanding Features of Dennison Management Analyzing and Anticipating Cyclical Movements. H. TILDMAN. Industrial Management, August, 1922.

Discusses ways in which the Dennison Manufacturing Company mastered recent cyclical movements. Throughout the depression year of 1921 a 96 per cent force was maintained, credit losses were reduced 75 per cent and sales were often in advance of production because the following methods were employed:

1. Research Department analyzed and predicted cycles.

2. Forewarned and forearmed its own salesmen for the impending depression, increased the sales force by 30 per cent and carried on an intensive sales analysis.

3. New lines released as bolsters for slumping sales in other lines.

4. Advertising appropriations withheld for depression years.

5. Surplus profits set aside for unemployment benefits for men temporarily laid off and to compensate skilled workers temporarily transferred to lower paid jobs.

6. Rigid credits during times of expansion.

7. Cultivation of export trade for stabilization of sales.

8. Purchasing methods based on business cycle with an absence of speculation in raw materials.

Growth of the company is stabilized by setting the rate of expansion at about 8 per cent a year. Business is refused which would involve purchasing equipment or constructing buildings greatly in excess of its normal rate of growth. The reasons given for inhibiting expansion may be classed as forms of business caution. Unity of thought on problems and policies was brought about by the elimination of absentee control. This was done by a recapitalization and reorganization after which all old stockholders relinquished their rights to surplus profits above the 8 per cent dividend, and to vote on Company policies. A partnership plan of control is used in which there are two main groups, one the managerial industrial partnership made up of officers and managerial employees and the other the employee's industrial partnership composed of all other employees. The managerial partners receive two-thirds of the surplus profits divided according to salaries and are entitled to vote for the board of directors. Five years of service is a prerequisite for the managerial partnership. If, under their management, the company fails to meet certain minimum requirements in regard to profits they are divested of their power and holders of first preferred take over the direction of the business. The employees receive one-third of the excess profits which is distributed according to length of service. They are represented

in the management by the working council. On leaving stock must be exchanged for second preferred which pays a regular 7 per cent dividend and is non-voting. Managerial, employee and second preferred stock will in a few years exceed the original first preferred. Thought is functionalized in committees and plays a big part in evoluting a unity of feeling throughout the entire organization. The force of individual leadership from within in developing the solidarity of purpose is outlined.

The New Emphasis in the Problem of Reducing Unemployment. H. FELDMAN, Bulletin of the Taylor Society, 1922., Vol. 7, Number 5.

Extracts from the manuscript of a forthcoming book on "Regularization of Employment." The author shows that the American contribution to thought and action on the problem of unemployment has resulted in a new emphasis on the possibilities of cutting down irregularities in employment by improvements in the technique of business administration. Traditional remedies for unemployment such as, public employment exchange systems, dovetailing of labor, and long-range planning of public work are reviewed and the difficulties and short-comings of each plan discussed. Achievements of American firms in regularizing production are suggested and the author points out that proposals for compulsory unemployment insurance would lay the whole cost on the industry, thus stimulating employers to save it all by efficient management.

A Critical Age as a Factor in Labor Turnover. HARRY D. KITSON, Journal of Industrial Hygiene, September, 1922, Pp. 199–202.

Discusses the turnover among some 2500 workmen in terms of their ages. It shows that workers under 25 have a relatively short period of service while workers over 50 show a long period of service. The length of service does not increase regularly with age but decreases from 36 to 50 with a minimum between 41 and 50. The writer advances economic reasons and a psychophysical reason as the causes for this high turnover. The psychophysical reason he feels is the strongest. His theory is that at this age physiological changes are taking place within the man similar to the changes occurring in a woman at this age. This change has psychic accompaniments which lead to a period of mental instability and sometimes actual insanity. He feels that his theory is borne out by the fact that persons coming down with senile dementia begin to come to state hospitals between 40 and 49. He recommends that employers exert considerable solicitude for men at this critical age and watch for all symptons.

Industrial Unemployment. A Statistical Study of its Extent and Causes. ERNEST S. BRADFORD. Bulletin of U. S. Bureau of Labor Statistics. August 1922, No. 310.

This report emphasizes again the lack of adequate statistics on employment in the United States and insists that much more detailed information is necessary before the problem of unemployment can be tackled. Dr. Bradford has pieced together information from all possible sources in the hope that this will give as complete a view as is possible at the moment and lead to the development of further sources of information. The report relates primarily to the manufacturing and mechanical industries, where the data are most important, since the division of labor has been carried further in these fields than elsewhere, and unemployment, which arises partly out of the division of labor, is more acute. The conclusions show that by far the largest proportion of total and partial unemployment is due to industrial and manufacturing conditions. Sickness and other disabilities and labor disputes are responsible for a much smaller proportion of unemployment.

Unemployment: What We Have Learned. WM. LEAVITT STODDARD. Industrial Management, August, 1922, Vol. 64, No. 2, pp. 95–96.

Surveys the unemployment situation on the basis of findings of investigations con-

ducted during January, February, and March, 1922 with the conclusions that unemployment has been more severe than is generally supposed; that recovery has been more gradual than pictured in the press; that the workers, by and large, have had greater savings to rely on than is popularly supposed; that labor and working force efficiency has been increased and that lack of accurate information has been one of the most menacing features of the situation. The first two false impressions were due to the overly optimistic press and Department of Labor reports which were based on inconclusive data. Welfare and relief agencies' reports are given to verify the conclusion that the laborer has been more frugal than is supposed. Increased efficiency reports were due partly to unemployment and partly to improved methods and the result that unemployment will be more or less chronic for some time is suggested. Bewails the fact that businesses have little prevision and cites Dennison Manufacturing Company as one in which the supply of accurate information forestalled a wholesale payoff. Cites, furthermore, the failure of the President's Unemployment Conference, with the entire resources of the federal government at its disposal, to guess within two or three million how many men were unemployed in September, 1921, as a sufficient indictment of our ignorant methods.

(*1*) *Employment and Unemployment. Statistics of Unemployment.* (*2*) *Unemployment Insurance. An International Survey.* International Labour Review of the International Labour Office, September 1922, Vol. 6, No. 3.

(1) Statistics of Unemployment for Europe, Canada and Australia show that unemployment is gradually decreasing in nearly every country. There are no reliable statistics as to the amount of unemployment in the United States but figures published by the United States Employment Service and based on numbers employed by certain establishments indicate a marked improvement in the situation.

(2) Systems of Unemployment Insurance which actually exist or are proposed in various countries are classified according to the method on which the cost of the system is distributed. The system by which the burden of insurance is shared by the workers and the public authorities is in force in the majority of countries at present. There is a marked tendency nowadays to substitute for it a system under which unemployment is regarded as at once a personal, industrial and social risk to be borne by the worker, the employer and the state. The most recent theory of all, exemplified in the Huber Bill, introduced in the Wisconsin legislature in 1921, treats unemployment as a purely industrial risk to be borne solely by the employer in the same way, for example, as industrial accident. Under this plan there is great stimulus to the employer to regularize his industry and thus lessen his risk. The survey notes a tendency to increase the amount of benefit paid to the unemployed or demanded by the workers' organization.

Cleveland's Weekly Labor Survey of the Employment Managers' Group, JOHN W. LOVE. Personnel Administration, September 1922, Vol. 10, No. 5, pp. 7–10.

This weekly survey covering labor changes in fifty large and medium sized establishments in a variety of industries was begun in November 1920. The Survey is carried on by a Committee with T. S. MacDonald, Secretary of the Industrial Management Council of the Manufacturers Board, Cleveland Chamber of Commerce, as executive in charge of the statistical and research work done by the committee. It covers facts such as the percentage of unemployment in the city compared to the peak employment record of May 1920, the hourly labor rates paid newly hired workers, production hours per week and the factor of overtime rates as well as part-time work,—all compared with peak figures of 1920.

An Inquiry into Labour Turnover. Conducted on Behalf of the N. I. I. P. Journal of the National Institute of Industrial Psychology, July, 1922, Vol. 1, Number 3, pp. 103–107.

Describes an investigation in a certain factory to discover (a) how frequently new workers had to be engaged to maintain the necessary staff over a period of two years, and (b) to estimate approximately the loss in output resulting from such labour turnover. The results show briefly:

1. An annual labour turnover of 105 per cent.

2. The average length of stay of those leaving within the two year period was found to 14¾ weeks.

3. Over the 6 months' period measured, the average daily output of all workers increased steadily up to the 20th week, after which approximate equilibrium was attained.

4. The potential average output lost per worker leaving, was 915 units, equivalent to an output of approximately eleven days' work.

5. Indirect loss of output.

a. Increased amount of spoilt work by new workers.

b. Foreman's time spent in interviewing new workers and giving special supervision to their work, which could be very profitably spent in his ordinary duties.

c. Constant coming and going of new workers, which unsettles the department and in turn leads to others leaving.

d. The impossibility under these circumstances for the management to foster any adequate *esprit de corps.*

e. The improbability that the recruits from outside firms will apply for work, if the opinion becomes prevalent that workers do not stop for long after engagement.

f. The extra clerical labour involved in entering up particulars of newcomers, taking up references, etc.

Changing Methods of Administration of Social Agencies. Survey, August 15, 1922.

The pendulum is swinging away from the autocratically controlled financial federation or council of social agencies toward a more democratic type in which adequate representation is given to social agencies. This change is evident in the organization of the two most recently formed councils and federations, namely, the Welfare Federation of Newark and the Council of Social Agencies of Buffalo.

The Newark federation is an outgrowth of the council of social agencies which has been in existence a little over a year. For some time there was talk of starting a federation separate from the council to be largely sponsored by the Chamber of Commerce. Several years ago such a result might possibly have taken place. But the newer sentiment prevailed and joint financing for social work has been placed where it belongs—in the organization which is truly representative of the social work of the city and which has expert social workers upon its staff.

The Buffalo council, though it will seem like an old friend to many social workers because of the former Social Welfare Conference which, before it was merged into the council, had been in existence for more than thirty-three years, is really a newly created federation of the principal social agencies of the city with common aims and objectives.

The organization of both bodies provides for a basic governing group representative of both the public and the social agencies. In neither case, however, is the representation given to outside interests large enough to give them any control over the social work of the city. Thus, that ghost of dominance of social work by business interests has been laid. It is this phase of these two organizations which will, perhaps, be of most interest to the large number of cities which are now considering federating their agencies. In each instance member agencies are allowed a representation upon the governing body. In the case of Buffalo two representatives are allowed from each member agency; in Newark each agency participating in the community chest has two representatives upon the board while other member agencies which share only in the other activities of the council have one.

The Buffalo council with its plan to initiate and to carry on joint activities is a promise of what the Newark group has already accomplished with only one year behind it. In Newark, for instance, the council started a social service exchange. In many cities this is often a part of the family welfare society. The following instance is one of many cited by the organization to show how effective the exchange has been: A mother of five asked a children's society in the city to place her children in homes in order that she might go out to work. An inquiry at the exchange revealed that the family welfare society was already caring for the family and that it had also made application for a mother's pension so that the family might be kept together. Thus, had the children's society acted upon the mother's request without first consulting the exchange, the two societies would have been working at cross purposes.

During the year the agencies participated in a rather exhaustive study of unemployment and suggested ways of meeting the situation, so far as possible, they have also just issued a directory of convalescent and vacation camps with recommendations regarding the admission of children to them.

Industrial Hygiene and Occupational Disease. Sir Kenneth Goadby. Lecture delivered in Royal Institute of Public Health. American Journal of Public Health, Vol. XII, No. 9, September, 1922.

Lead Poisoning in Industry.—The large number of industries in which lead poisoning may arise tends somewhat to exaggerate the importance with which this disease is sometimes regarded. The author refers to the proposed prohibition of white lead in painting and to the proceedings of the International Labour Conference regarding the prohibition of white lead in paints, and states that sentiment rather than facts appeared to be the arguments relied upon by the Conference in discussing the question. The majority of the evidence related more to lead poisoning in general than that among painters. The Commission did not make a final recommendation for total prohibition of white lead in painting. Two tables are presented illustrating the attack rate and the relative severity of lead poisoning in various industrial processes. The most severe cases occur in processes in which but a limited amount of lead is absorbed each day over a long period of time, as exists in file making and house painting. Statistics of claims for occupational disease compensation in Great Britain in 1919 show that lead poisoning formed only 2.3 per cent of the total claims. In 1920 the ratio was about the same. Lead poisoning among painters formed about one-fourth of the total reported cases of lead poisoning. With reference to tuberculosis the author makes the interesting observation that tuberculosis among the painters is much more common than among other lead workers. This is attributed to the inhalation of silicious dust associated with the use of sandpaper in dry sanding. The occurrence of gout among painters is attributed to the volatile thinners used as a vehicle for the application of paint. The relative incidence of lead poisoning for given industries and the proportional risk attached to any given industry is still a matter of conjecture.

The mechanism of poisoning in the various processes is described in detail. The amount of risk of poisoning through lead gaining access to the mouth from unwashed hands is extremely small. Previous to 1900 various regulations were in operation with regard to the provision of washing accommodations, overalls, food and hygienic precautions; but from 1900 onwards the establishment of exhaust ventilation for dust removal in dusty processes was initiated and a diminution of cases of lead poisoning commenced at once. Charts are presented illustrating these points. The author ascribes the various lead paralyses to hemorrhages found in the sheaths of nerves supplying the affected muscles. The pathology and symptoms of lead poisoning are described in detail. With reference to paralysis it is stated that cases of wrist drop observed in the past twenty years have all recovered. Thirteen per cent of lead cases have rheumatic manifestations,

mainly in the vicinity of joints. The greatest incidence of lead poisoning comes during the first year of exposure and the later years show only sporadic cases, which is attributed to the development of a certain amount of tolerance for the agent. As far as can be ascertained from observation and animal experimentation an amount greater than 2 mg. of lead per diem is an unsafe dose to absorb. Any factory air which shows that men exposed to it would inhale more than 2 mg. per day must be considered as highly dangerous. Periodical medical inspection with power to shift the workers from a dangerous process to a less dangerous one and industrial compensation for lead poisoning, tend to reduce the number of cases, thus effecting the true aim of industrial hygienists, the improvement and safeguarding of workers by the introduction of precautionary and hygienic regulations without interference with the economic relations or the conduct of the industry.

Study of the Effect of Gasoline Fumes on Workers. Octavius M. Spencer. Public Health Reports, September 22, 1922, Vol. 37, No. 38, pp. 2291–2296.

Describes the investigation of three groups in a plant where gasoline was used extensively, first the exposed group, second the adjoining group not so near the fumes, and third, the control or non-exposed group. A record was kept both of the average daily output and of the dispensary attendance before and after discontinuance of gasoline, during the period, August, 1920, to December 11, 1921. The resulting conclusions are as follows:

1. The gasoline fumes liberated in the workroom studied, had produced cases of mild chronic gasoline poisoning.

2. In workrooms where ventilation is not adequate, the liberation of gasoline fumes produces cases of acute or chronic gasoline poisoning.

3. The liberation of fumes, in an improperly ventilated workroom, results in increased dispensary attendance and absenteeism among the workers exposed.

4. Increased production and lower rate of dispensary attendance were obtained by the removal of gasoline fumes.

Poisoning by Benzol Carbon Tetrachloride Cement with Special Reference to The Early Symptoms of Benzol Poisoning. E. B. Starr. Journal of Industrial Hygiene, September, 1922, pp. 203–211.

Studies the effect of a Benzol Carbon Tetrachloride cement on female workers in a millinery establishment. It also includes a study of the dangers in using benzol and carbon tetrachloride. The object of the article is to direct attention to the importance of the early and relatively mild symptoms of benzol intoxication, to point out the bearing on industrial health of the increased use of benzol permitted by its combination with carbon tetrachloride, to direct attention to the safeguarding of employees handling benzol, to urge that the necessity for ventilation be printed on benzol containers, and to assemble a fairly complete bibliography on the systemic effects of carbon tetrachloride.

The Mind of the Modern Worker. I. David Cohen. Industrial Management, August, 1922.

Examines the demoralizing effects of modern machine production methods on the mind of the worker and outlines remedies. Two classes of workers, dull and bright, are affected differently. The dull grow duller for their minds are vacant; while the bright take advantage of the opportunity to think. The brighter harangue, agitate and disturb their fellow workers. Furthermore they organize them into groups and factions. This condition is aggravated also by the tension and monotony of specialized jobs. The direct causes of unrest are thought to be mental rather than physical. Suggests further technical education to arouse ambition, more skillful employment management to avoid resentment at haphazard methods of promotion and transfer, instruction in the proper use of leisure that the mind may be kept healthful and further encourage-

ment in assuming community and civic duties and obligations that the mind of the worker may be at its best.

Industrial Welfare from the Employer's Standpoint. MR. LEALAND. Welfare Work, July, 1922, pp., 123 Vol. III, No. 31.

Employers should recognize that their employees are humans much like themselves, and can appreciate a straight deal; and an intelligent and generous effort on the part of a firm to improve the conditions under which the workers toil will meet with general approval and recognition as an act of good-will.

Industrial welfare work must begin in the workshop. The workshop should be made airy, clean, and light. A canteen should be provided wherever a considerable number of people are employed. The provision of good and cheap meals is a sound investment. Ambulance facilities should be provided. A rest room for female labor is desirable.

Having done everything possible in the workshop for the physical well-being of employees, the employer can also find a wide sphere of helpfulness in providing means for their physical and mental development outside of business. Some enterprising firms have provided for their employees extensive facilities for recreation—athletics, rambling clubs, literary and debating societies.

The cost of welfare work can be accurately determined, but the results are to be found in the better physical and mental development of employees, the removal of antagonism, distrust, strife, and ill-will, and the promotion of sympathy, mutual understanding and coöperation, as well as on the balance sheet. Rarely does one hear of serious industrial strife in those firms which have developed sound welfare schemes.

Disseminating Information among Employees. Special Report No. 2, National Personnel Association, August, 1922.

This bulletin is based upon the results of a questionnaire sent out to ascertain what methods for disseminating information are now in successful use in a large number of representative concerns. It was found that conferences, club meetings, mass meetings, individual messages, employee magazines, bulletins, circular letters, manuals, bulletin boards, slips distributed in pay envelopes, and library services are the most common means of disseminating information. Special methods are, of course, introduced as the need for them arises.

There are at least four reasons why much can be gained by a definite plan for disseminating information. "First, it increases the interest of the employee in his work and in the welfare of the concern. Second, it gives correct ideas and eliminates false ideas as to the general conditions of the company or industry. Third, it may be the means of creating ambition among employees, encouraging suggestions and possibly stimulating the inventive spirit among them. Fourth, it makes employees more efficient and more capable of increasing both the quality and the quantity of their work."

Educating the Workers in Industrial Safety. G. WILLIAM ELLIS. Industrial Management, August, 1922, Vol. 64, Number 2, pp. 105–108.

Discusses methods of safety education. Quotes statistics which prove that accidents dependent upon the human element—thus those quite avoidable—represent seventy-five per cent of the total. Factors important in promoting industrial safety are:

1. Casualty Insurance Institutions propaganda.
2. Bulletins.
3. Bulletin Boards.

In all these forms is stressed the use of the appeal to the best in the worker rather than the negative appeal. Suggests use of same principles in selling safety as are now used in advertising.

Organization Personnel Planning. B. A. FRANKLIN. Industrial Management, September, 1922, Vol. 64, No. 3, pp. 181–183.

Discusses the need of management setting an example in the matter of securing a coordinated plan for the entire industrial unit. Merely says to management "Practice what you preach."

The 'Psychosis' of Industry. FRANK MASON HARRIS. Industrial Management, July, 1922, p. 18, Vol. LXIV, No. 1.

There exists a mental unhealth in the collective mind of industry. This psychosis is the result of a conflict between wish and fact. These are the thwarted desires of both Capital and Labor which require repeated repression. So long as these complexly interrelated desires succeed in impinging themselves upon the industrial consciousness the same undesirable reactions may be expected in the form of strikes, lockouts, sabotage, blacklists, and radicalism.

The worker whose wage is based upon hourly or piece rates, and whose employment is literally from day to day, overstresses the money factor of employment. A higher wage constitutes the primary desire of Labor, a desire which obviously meets with frequent and unmistakable repression. The Capitalist points out the risks of the entrepreneur, and is determined to hold on to all he has. The inefficiencies resulting from the divergent ambitions of the two are paid for by the public.

Benevolent personnel policies of many large employers of labor are accepted passively or met with violent objections by the workers, being looked upon as bait.

Coöperative ownership has been launched in scattered districts as a method of fusing the now divided interests of Capital and Labor into a common interest which will stand, not by reason of concessions, but rather by reason of the mutually selfish interest of the rank and file of industrial organization. The worker-owner combines within himself the interest of the owner for maximum production with the worker's interest in maximum wage. Carelessness in machine operation sabotage, and conspiring with co-workers to limit production are done away with, and the feeling of drudgery is replaced by personal enthusiasm for the job.

Coöperative ownership taps an unusual source of capital, but more than that, it taps a source of originality, initiative and executive power not within the reach of the usual existing capital-labor relation. Coöperative ownership exerts a restraining influence on labor turnover.

The worker should not be forced to buy stock, and the stock should be of sound value, because in this new relation, the worker is one of the investing public.

Coöperative ownership teaches equality of opportunity, though not equality of ability, and the workers themselves see demonstrated the fairness and effectiveness of coöperative effort.

Industrial Relations. CARLETON F. BROWN. Industrial Management, September, 1922, Vol. 64, No. 3, pp. 185–188.

Analyses the growth of management, the widening cleavage between capital and labor and the introduction of the personnel department. Managements weakness through being controlled by capital can not be eliminated, the author believes, through joint management by labor and capital. The solution lies within management itself and must be arrived at by a self analysis of management, an elimination of its faults and an establishing within its heart of ideals by which it is willing to stand or fall. He calls for a decentralization of the personnel task, if not of the department, which means all executives down to the foremen must be imbued with the principles and ideals of the personnel code. Stresses the individual treatment by management of the individual rather than the group method. Management must stand back of the personnel department in all its work if it is to be effective.

Developing Leaders Through Committees. W. W. KINCAID. Personnel Administration, July, 1922.

The old autocratic methods of business control, which burdened the chief executive with too much responsibility and prevented the growth and development of subordinate executives, is giving way to the modern cooperative method which corrects both evils. Coöperation and conference, based upon willing and intelligent team play, provide instruction and training for all grades of employees. It calls out the initiative of every member of the working force. Our

adaptation of this method is known as the Committee System. The Committee System embraces such working groups as the Board of Directors, Executive Committee, Clearance Committee, Sales Council, and Works Committee. The Executive Committee includes all the managing heads of the business. The Clearance Committee correlates the activities of all such committees, and is composed of the chairmen of those sub-committees and special assistants. The Sales Council includes the General Sales Manager, Sales Department heads and factory representatives. The Works Committee is a sub-committee of the Clearance Committee. It is headed by the superintendent of the works and composed of superintendents and foremen. Certain of these foremen, in turn, are chairmen of sub-committees reaching down into every department of the works. The system is not similar to what is called employer representation. It is more efficient and practical. It enables the management to assemble each month a complete and comprehensive report of the operations of the business.

The Functions of A Labor Policy. ERNEST C. GOULD. Industrial Management, September, 1922, Vol. 64, No. 3, pp. 153–154.

Analyzes requirements of capital, labor and the public in the determination of the labor policy. Outlines in detail the principal features to be provided for in establishing policies. In a case where a specialized division of management planned and supervised the policies, labor turnover was reduced in one year 38½ per cent. The sixteen effective policies used in this case are given. Suggests joint council method of establishing policies with a summary of a report of the Standard Oil Company of New Jersey, where such a plan was inaugurated in 1918, which shows how much time in meetings was consumed on various features of the labor policy. This list contains features ranging from wages, on which 37 per cent of their time was spent, to housing which took but 0.2 per cent of the time. Advantages of the joint council plan are given and contain the following:

1. Instructs force in labor policies.
2. Instills confidence.
3. Secures greater coöperation.
4. Removes possibilities of misunderstanding.

The Outstanding Features of Dennison Management. II. Sales Engineering and Operation. H. FELDMAN. Industrial Management, Sept., 1922, Vol. LXIV, No. 3, pp. 145–150.

Treats of methods of control of products and their sale. Merchandising division headed by the Merchandise Committee carries on the functions of "sales engineering" in planning and control of projects. The three major problems of coördination assigned to the Merchandise Committee are:

I. Determination of the type of product and service.

II. Determination of the total amount to be produced in any one year and the relative amount of each item.

III. The actual scheduling monthly and otherwise of the amount of each item needed for current sales or regular production, in special coöperation with producing departments.

Each of the above is clearly described and specific cases of application are given. The Research Division, composed of six departments engaged in commercial, chemical, mechanical, methods of research time study and rate setting and organization planning, has close relationship with the Merchandise Committee. Diversification of products—to secure an all year business, standardization or "simplification" to eliminate waste, and the maintenance of a reserve of ideas for possible need, are three problems which are solved in determination of type of product and which have aided greatly in reduction of costs and elimination of cyclical movements. Planning is done eighteen months in advance for stock items.

Because the sales forces is well trained in Dennison methods they sell what they are told to sell and the balance between factory and sales is thus kept true. Sales research is exhaustive which is making possible further control of the market.

The Service Bureaus, cultivating the dealers and the public, add to the phenomenal success of the company.

The Outstanding Features of Dennison Management. III. Production Technique and Personnel Administration, October, 1922, Vol. LXIV, No. 4, pp. 225–230.

Discusses in detail the planning and routing of orders in production, management of personnel and method of wage payment. Planning and routing of orders though highly complicated in form is relatively simple in operation. Clarifying details of its operation in one division are given. Scheduling work by this index method has resulted in the reduction of overhead and cost and an increase in production at a time when labor and material costs were high.

The personnel department was one of the first established in this country. The author discusses tersely the welfare, health, sanitation, employment plans which are well established. Outstanding features of this department are:

1. Workers are trained until a standard time is accomplished.
2. Wage payment made up of a Base Rate and amount for Standard Production. The former, being the regard for the personal qualifications and the latter a rate according to output and class of work performed.
3. Price rates never cut. Base Rate is reduced when necessary.
4. Centralized control but decentralized operation of personnel functions.
5. Foremen spend time as interviewers for training in personnel methods and to insure coöperation.
6. Works Committee.
7. Participation of employees in industrial partnership to the following extent; as employee partners 51% of all employed, as managerial and employee partners together 61% of all.
8. Suggestion System.
9. Unemployment fund from excess profits.

Effect of Rate Setting on Labor Costs. Wm. O. Lichtner. Industrial Management, September, 1922, Vol. 64, No. 3, pp. 169–172.

Sets forth reasons for eliminating the unnecessary rate settings. Rate reductions cause demoralization of working force with low production and high labor turnover, which in turn increases overhead costs. Thus the need of an original piece rate, which will not demand alterations from time to time. For this he outlines a plan of analysis of the job to determine piece rates that will require a minimum of changes.

Criticises incentives confined to rewards for quantity production and gives illustrations of bonuses based on quality of product and economy of materials. Bonuses for repair crews' idle time and cutters' waste materials are two of those suggested.

Labor Relations and the Stop Watch. William O. Lichtner. Industrial Management, July, 1922, Page 31, Vol. LXIV, No. 1.

Within the past year, it has become more and more apparent that the maintenance of satisfactory relations and good feeling between employer and employee depends mainly on mutual satisfaction with the wage agreement. The wage agreement must be definite and specific, and it must be profitable to both employer and employee, which means it must give high wages and low labor cost.

This can best be accomplished through job analysis and standardization. Time studies are used in job analysis (1) to serve as a gauge by which the effectiveness of alternate methods, materials, tools, appliances is compared, (2) to perpetuate the standards of time which have been developed (3) to determine the correct time allowances after standardization has been accomplished.

To analyse a job, the first step is to study the method in use without the use of the watch, setting standards for the machines, changing the design in any ways to facili-

tate production. The stop watch is then put into use, and studies made of the different methods and the time noted for each operation. A true standardization for the job can then be made, and a proper standard day's work for the operator. By conforming to this standard the operator can increase production and increase his earnings, at the same time reducing the labor costs to the management.

An Experiment in the Introduction of Rest Pauses. E. FARMER AND S. M. BEVINGTON. Journal of the National Institute of Industrial Psychology, July, 1922, Vol. 1, Number 3, pp. 89–92.

An investigation of the value of rest-pauses. The results of the experiment show the value of rest-pauses when appropriately introduced. It was found that despite a reduction of nearly 3 per cent in the hours worked (owing to the interpolation of the rest-pauses), the total weekly output was increased by over 5 per cent. The form of the work curve improved and the workers expressed their appreciation of the rest-pauses.

Time and Motion Study. E. FARMER. The Journal of Industrial Hygiene, September, 1922, Vol. 4, No. 4, pp. 154–169.

Time and motion study is of great industrial importance. It was introduced by Taylor and followed up by Gilbreth with the direct object of increasing output; the former timed the quickest workers, while the latter, by timing units of movements, determined a shortest possible time; both these pioneers urged on workers to attain the pace fixed. Workers object that both these methods which aim only at speed result in unhealthy drive.

A new point of view is now proposed which concentrates attention on ease of movement and not on speed of production, on the effort of the work and not on the task. The object is, by making necessary movements rhythmic and graceful, and by eliminating unnecessary movements, to minimize fatigue and produce pleasure in work. Increased output is not the objective, and may or may not result. It is significant, however, that in every case that has come under the writer's notice, where this new principle has been employed increase of output has in fact resulted.

Practical applications of this new point of view at a process of sweet dipping resulted in an increase of output of 88 per cent; at bottling sweets, in an increase of 50 per cent; at covering chocolates, in greatly shortening the time required for acquiring proficiency; and at chocolate packing, in an increase of 38 per cent. No stimulus was used in these experiments to induce the operatives to work faster.

Gives a clear analysis of the objectives of time and motion studies. Shows that the tendency to confuse these studies with wage incentives and speeding up processes has worked to the detriment of the scientific side of their development. Points out where earlier workers have disregarded the psychological and physiological phases of both fields. Four excellent illustrations are given of the effects of the new method without the use of pacemakers or other incentives.

The Twelve-Hour Day and the Engineers. SAMUEL MCCUNE LINDSAY. Survey, September 15, 1922, Vol. 48, No. 16.

A report by the Committee on Work-Periods in Continuous Industries of the Federated American Engineering Societies will be published shortly in book-form by E. P. Dutton and Company. Two investigators, an economist and an engineer, working under grants from the Cabot Fund have carried on a field investigation lasting more than a year. The Engineers' Committee concludes "that there is no economic or technical necessity for the two-shift or twelve-hour day in continuous industry; but, on the contrary, with proper planning which will vary in its requirements in different industries and even in different plants in the same industry, a shorter period or three-shift system can be inaugurated with gains to all interests affected." The report is particularly timely in that it is available at the moment when Judge Gary's Committee of the American Iron and Steel Institute, appointed as a result

of President Harding's conference of steel executives in May, is conducting an independent investigation of the problem of how and where the twelve-hour day in the steel industry can be abolished.

Les Pupilles de la Nation et L'Apprentissage. La Formation Professionnelle, Paris, August–September, 1922, No. 47.

Deals with a report presented by M. Terguem, President of the Department du Nord Section, to the Congress of Presidents of the Departmental offices of the "Wards of the State" in which he suggests certain changes in methods of dealing with the apprenticeship of the children concerned. The most interesting part of the report deals with vocational guidance. Citing an example of nine children employed in the building industry who had been killed by falling from ladders or scaffolding because they had been seized with dizziness, M. Terguem shows that there should be a real attempt to find out the physical and mental qualities and special aptitude of the children before placing them in any occupation. He proposes that a bureau of vocational guidance should be evolved through three stages. In the first stage, already reached by the department of the North, letters and questionnaires varying according to the sex of the word are sent to the mothers when the children are thirteen. The four questionnaires deal with manual work, intellectual work, household and store work, and commercial work. In the second stage, the Presidents of the local commissions are to become vocational counsellors. The third stage calls for the foundation of an office with specialists to carry on the work of vocational guidance.

Results Obtained from the Technical Courses of the Brooklyn Edison Company. F. N. FENNINGER. Personnel Administration, July, 1922.

The company gives courses in Electrical Operating, Electrical Distribution, Meter Testing, Practical Electricity, and Commercial Engineering. In most courses, classes meet once each week, and the average attendance ranges from 13 to 42, Practical Electricity interesting the largest number. Attendance is voluntary and classes are held after hours. Most of those who complete courses soon earn promotions. More than two-thirds of the foremen and operators in the Company's substations have taken one or more courses in the school. The cost per year per student is about 6 per cent of his annual salary. "The raise in pay received by men who completed courses a year ago was more than double the amount spent on their education."

Personnel Methods and Training. DR. C. R. MANN, Chairman, Civilian Advisory Board, War Department, Personnel Administration, September, 1922.

The personnel methods of the Army, hastily developed under stress of war necessity, including the occupational index, qualification record, psychological and trade tests, and the training systems, are now being perfected under the guidance of civilian experts. The occupational index has been revised and the number of job titles reduced from about 650 to 150. Every position requiring technical skill in the army is now described accurately by a standard name and a clear but brief definition. Experiments are still in progress with the trade tests and psychological tests. A system of developing courses of instruction to prepare men to fill the jobs defined in the occupational index, has been worked out. The steps in the process are the analysis of the specifications into instruction units, the selection of real jobs, and the selection of questions and tests to check progress and proficiency. All instruction in the Army Post Schools is carried on by the job method, and progress is determined by the mastery of jobs, not by the number of hours spent on each job.

Scientific Method Versus 'Hunch' In the Chief Executive's Office. RALPH C. CRAIG. Industrial Management, July, 1922, Page 43, Vol. LXIV, No. 1.

Industrial management studies, begun in production work, and continued in sales work, have lately been continued in the work of the chief executive. The work

of the chief executive may be grouped into two main classes: (1) the development of his organization and internal technical problems, and (2) the planning of operations of that organization to fit external conditions in the industry, and in general manufacturing business. The first of these is accomplished through departmental executives, and through the accounting department the status of his own organization is readily pictured. The second, formulating the broad general policy of the business, consists of an interpretation of external conditions and planning internal operations to fit the external conditions so that the greatest profit results.

In the past this has been done by unconscious analysis. Impressions received from his own experiences of the past, from current reading, from men in his and other similar organizations, from statistical services, and from bankers, have been combined to render a decision, and as a result of this unconscious analysis, the decision reached is often influenced by immediate and temporary conditions, and even by the physical condition of the executive.

The war has resulted in more and more of the principal industries combining to publish specific information as to production, consumption, and stocks on hand. These facts are now available for their own use, and for the use of allied industries.

In considering external problems, there seem to be two groups of factors of importance, (1) those facts relating specifically to supply and demand, processes and marketing possibilities of the specific industry, and (2) those factors of general business which affect all industries such as general price level, general wage level, interest rates and credit conditions, availability and price of transportation, etc. The first has received some attention from the principal executive, but the second group has had little attention paid to it and is a factor of great importance.

Many progressive companies have organized departments of business research which analyze and present (usually in chart form) comparative facts, that combined with the personal experiences of the executive form a basis which enables him to arrive at a better decision than he could evolve by the old "hunch" method.

Progress is bound to be slow, as in all new ideas, but it is a healthy sign to see the definite interest that is being taken by executives generally who seem to be keen to get light on practical application of analytical methods to their own business problems.

Choosing a State Official by Mental Tests. Burdette G. Lewis. American Review of Reviews, Vol. LXVI, No. 2, August, 1922, pp. 171–176.

The State of New Jersey recently had a vacancy for an executive with experience in the field of production engineering, cost control and personnel administration. The vacancy was advertised, and through examinations of applications and through personal interviews, the number of likely applicants was reduced to twelve. These twelve men were put through a three hour program of tests by Dr. Carl C. Brigham, of Princeton University, during which their general intelligence, technical, economic, and social information, and foresight, were measured. General intelligence received the greatest stress in this battery of tests. The man who received the highest average standing in these tests was selected for the position. Dependence was not placed primarily on the psychological examination, but it "was given to check up our best judgment arrived at through the use of the approved and most up-to-date personnel methods of our largest corporations."

Interpretation of the Human Face from Photographs. Bulletin of Randolph-Macon Woman's College, July-September, 1922, Vol. 8, Number 4, pp. 3–17.

The object of this study was to answer the following questions: To what extent is it possible to judge a person's traits from a study of his facial features?

Is it possible to find any positive correlation between the face and the talents of a stranger?

Fifty photographs of members of a former graduating class of Randolph-Macon Woman's College were selected for the test.

These photographs were judged by forty students of the same college, five members of the college faculty of whom only one was a man, and five members of the administrative staff. In addition to these fifty persons unacquainted with the subjects, three other persons who were acquainted with the majority of the subjects acted as judges.

The judges using the photographs as indicators, ranked the fifty subjects in their order first in intelligence, then in musical ability, then in literary ability, then skill in painting, and finally in scientific ability. The judges were also asked to select the three faces which appeared most neutral.

The conclusions of the study are summarized as follows:

1. The casual observer has no basis upon which to form a judgment of other persons' intelligence from their photographs.

2. Experience in judging intellectual progress renders one's judgment of facial expression slightly more correct with regard to intelligence only but not with regard to special mental abilities.

3. Neither age nor sex of judge and judged are of any advantage in judging faces.

4. Special traits, like musical, literary, artistic or scientific ability are slightly easier to judge than general intelligence and result in greater agreement of judges among themselves whether their results are in agreement with the objective measures or not.

Has Another Man Got the Job You Should Have. H. HIRAM HERTEL. Forbes, September 16, 1922, p. 588.

A report of the accomplishments and methods of Dr. James M. Fitzgerald, of Chicago, vocational counsellor. He maintains that men fail largely for three reasons:

First, they cannot analyze themselves correctly, nor are their parents or teachers able to do so.

Second, men do not form logical plans of procedure.

Third, they lack self-confidence and continuity of purpose.

Rivet these things accurately for a man and success is inevitable.

The challenge is to analyze ourselves correctly, for the man who fails must find within himself the remedy to overcome his weakness, to change it, to make its adaptations. He should ask himself, "Where have I failed today?"—not, "Where have I succeeded?"

Training and Inspiring Organization Personnel. B. A. FRANKLIN. Industrial Management, August, 1922, Vol. 64, No. 2, pp. 84–87.

Describes ways of training and inspiring clerical and sales personnel. Advocates instruction in policies and methods through departmental committees meeting informally though regularly. For instruction in practical and fundamental courses recommends external agencies.

Without Hope of Promotion but Contented with the Job. A GENERAL MANAGER. Industrial Management, September, 1922, Vol. 64, No. 3, pp. 160–161.

Eulogizes the satisfied, ambitionless worker in his company, (unnamed), where a large amount of technical education is necessary for holding important offices. Thus great promotion is inevitably beyond the mass of workers. States devices whereby these workers are aided in their contentment, some of which are: group insurance, company built houses, dormitories, factory lunches, free coffee, community gardens, mutual benefit association, house organs and vacations with pay. No separate department of industrial relations exists but almost all improvements in working conditions and in relations between management and employees come from the men in "efficiency meetings" of three kinds:

1. Of executives of the first class.
2. Factory meetings.
3. Joint sessions.

Informality and freedom to air grievances are the secrets of their success. In joint sessions only superintendents, assistants, foremen and station men represent the rank and file. In contrast with the en-

couragement of satisfaction is the firm's record of no strikes in twenty-one years of operation. Though contented, the men are encouraged in production by prize plans and bonuses.

Capacity for Detail as an Executive Asset. HELEN HYSELL. Industrial Management, September, 1922, Vol. 64, No. 3, pp. 138–140.

Relates cases showing the value of detail men as executives and expresses the opinion that only pseudo-big men are blind to details.

Pensions—Industrial and Commercial Employees. Special Report No. 1, National Personnel Association, August, 1922.

Describes some of the outstanding features of pension plans. Apart from the altruistic motive for pension systems the following advantages are ascribed to the plan:

Reduction of labor turnover.

Its use as a weapon for enforcing discipline.

Increased efficiency.

Improvement in morale.

It recommends a thorough investigation of the cost of installing and the benefits to be derived before adoption of a pension plan is made.

In order to sell the idea of the pension plan to employees, it is necessary to have the ground well prepared for it and to give the plan a certain amount of publicity calculated to make the employees accept the plan and accept it enthusiastically.

A list of firms who have adopted pension plans is appended.

Russian Factory Wheels in Motion. SANFORD GRIFFITH. The Survey, July, 1922, pp. 468–472.

Describes the attempt of the Russian government to put the industrial organization in running order. "All questions of ideal forms of state, of revolution, of reforms in education have become secondary to the elementary need of food and clothing. The Russian situation now demonstrates on a large scale the physical fact that a very hungry man is not interested in ideas nor ideals. He wants food." As a part of the new program all of the big factories, most of the moderate sized ones, and a part of the smaller ones are being kept for state exploitation. Less profitable factories are being closed down. "Every form of industrial organization exists in Russia today. There are nationalized factories run by the central government. There are factories operated by local trade unions on a selfish syndicalist plan. Then there are municipal factories, coöperative enterprises, and many kinds of leased and privately owned factories operating with the approval of or in spite of the Soviet Government." In Petrograd about one-sixth of the factories are actually in operation. Larin, the leading statistician of the supreme council, estimated that in 1920 the annual output of iron and steel had fallen to four and one-half per cent of the normal peace time output. The output of iron ore fell to twelve and one-half per cent and of steel to two and one-half per cent of what it had been before. In the Baltic shipyards the writer reports two thousand of the original eight thousand employees at work. Fifty per cent of the machines were useless, either junk or idle for want of spare parts. Strikes occur due to insufficient wages wherewith to buy food. Fuel is also needed. Demoralization is also due to lack of confidence in the routine of the Soviet Government. Compulsory labor battalions failed partly because too little attention was paid to the qualifications of the workers for the tasks required of them. Also men forced to work against their will produce inferior goods. When the government can offer the unemployed a living wage, they will find no shortage of applicants for voluntary labor. One engineer reported that he spent about a fourth of his time in technical duties. The remainder of it he spends in looking after the welfare of his workers and in sending out expeditions for food and machinery. He had groups of workers looking for machine parts in Siberia. Others were down in the Ukraine exchanging farm implements for food. He was also obliged

to give a good part of his time to lobbying in Moscow for necessary supplies from the Soviet Government. The Russian labor market is becoming an open one. Soviet factories must compete more and more with private ones for the available supply of labor. This means that both must offer better terms than have existed up to now if they hope to keep workers in the factory towns and to attract a part of them back from the land. Food has proved a prerequisite to production. Compulsion in its cruder forms has failed. Working for the good of society or for the community are conceptions quite beyond the understanding of the average Russian worker. "Even to own the factory with other workers is an idea too complex for the Russian worker. Work by the piece gives him at the end of the hour and of the day a specific number of rations. In some factories the managers were giving their men fifteen to fifty times the official wages in order to stimulate effort. The government, where the goods are most urgently needed, overlooks these infractions of its wage scales."